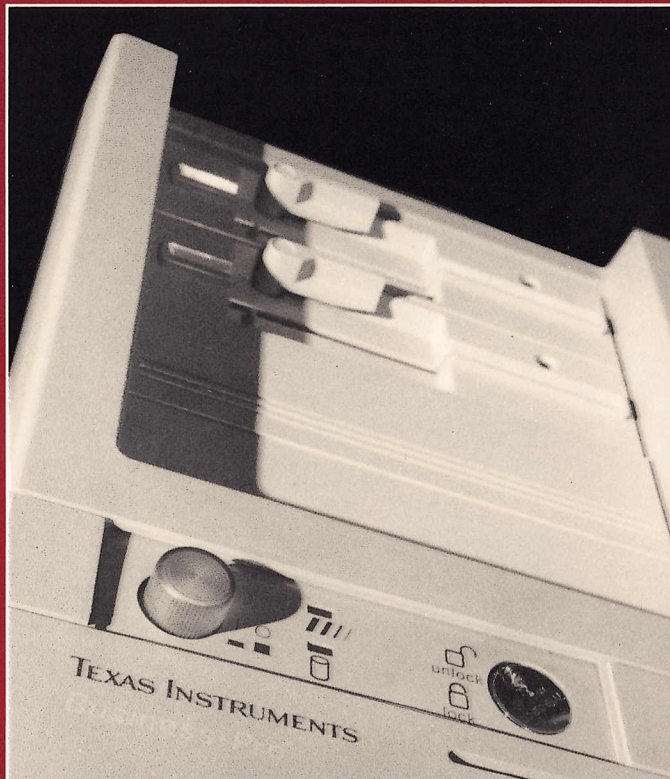

Texas Instruments

BUSINESS-PRO™ Professional Computer

Installation Guide



Texas Instruments
BUSINESS-PRO™ Professional Computer
Installation Guide
TI Part No. 2241096-0001
Original Issue: June 1985

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Notice

This equipment has been certified to comply with the limits for a class B computing device, pursuant to Subpart J of Part 15 of the FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

**Shielded
Cables**

In order to ensure compliance with the Class B computing device radio frequency emission limitations, only shielded cables such as those specified by Texas Instruments should be utilized in connecting peripherals to this computer.

Introduction

This guide contains instructions for setting up your system for the first time or for adding an option at a later time. Also provided is information for removing options. Information is included both for BUSINESS-PRO options and for options that are compatible with the BUSINESS-PRO Computer.

This Guide and BUSINESS-PRO Options

BUSINESS-PRO options are designed specifically for the TI BUSINESS-PRO Professional Computer.

This guide works together with the manuals for BUSINESS-PRO options. It includes preparatory procedures for installation and explains the order in which to use your BUSINESS-PRO option manuals for the most efficient installation.

This Guide and BUSINESS-PRO Compatible Options

In addition to BUSINESS-PRO options, many other options are compatible with, but not specifically designed for, the BUSINESS-PRO Computer.

Compatible options include both Texas Instruments products that are designed for a wide range of computers, such as printers and the TI-Speech™ system, as well as many products made by other manufacturers. In either case, before you install an option, check with your place of purchase to make sure the option is compatible with the BUSINESS-PRO Computer.

Although this guide cannot cover specific information about each BUSINESS-PRO compatible option, it provides information to help you use option manuals. When you install or remove an option that is compatible with the BUSINESS-PRO Computer, keep the following in mind.

- You may be told in an option manual to do some preparatory steps that this guide has already instructed you to do.
- On such steps as when to reassemble the system unit and when to perform tests, follow the instructions in this guide, not in other option manuals.

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**Using the
Guide for
Initial Setup**

If you are setting up your BUSINESS-PRO Computer for the first time, begin with Chapter 1, Preparing for Initial Setup.

Chapter 1 explains which chapters to read for setup tasks specifically required for any system components you have purchased.

**Using the Guide
for Adding
an Option**

If your BUSINESS-PRO Computer is already set up, begin with Chapter 2, Preparing to Add an Option.

Chapter 2 explains which chapters to read for any type of option you are adding.

**Using the Guide
for Removing
an Option**

If you are removing an option, refer to Chapters 11, 12, 13, 14, or 15, whichever is appropriate for the option you are removing.

Table of Contents

Chapters 1 through 10 can be used both for initial setup and for adding an option to your system after it has been set up. Chapters 11 through 15 describe how to remove any type of option and, where applicable, contain information on how the removal of an option affects your system.

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Chapter 1: Preparing for Initial Setup

Use the information in this chapter to prepare for setting up your system for the first time. (If you are adding an option to a working system, begin with Chapter 2, Preparing to Add an Option.)

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Planning Your Work Area

You should consider several factors when selecting a location for your system. You should also plan the placement of all components of your system to make the most efficient use of the available space.

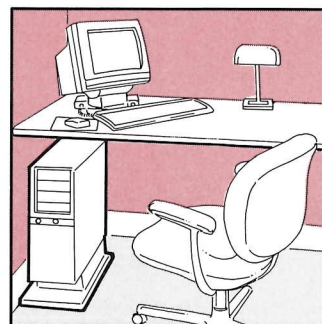
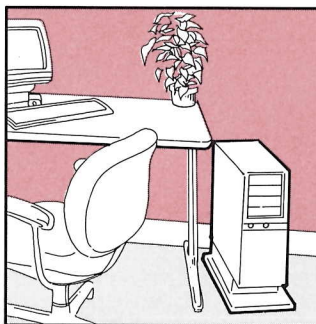
Choosing a Work Area

Generally, an environment that is comfortable for you is adequate for your system. You should have:

- Easy access to a properly grounded, three-pronged electrical outlet that is on a line separate from that used by heavy equipment, such as air conditioners and copy machines. (You will require more than one outlet if you are installing a printer.)
- Access to a phone jack if you plan to use a modem.
- Adequate lighting that minimizes glare on the display unit screen.
- No direct sunlight on the system.

Selecting a Place for the System Unit

The system unit comes with a stand so it can be placed on the floor.



When you are ready to position the system unit in the work area, you need to do the following.

- Place the system unit in an area where it will not be bumped easily.
- Place the system unit so the floppy drive is accessible.
- Allow a few inches of space behind the system unit for proper ventilation.

**Planning the
Arrangement of
the Work
Surface**

The work surface you choose should include adequate space for the following.

- All system components that you intend to place on the work surface (display unit, keyboard, mouse, etc.)
- Papers, books, or any other materials you use frequently in your work

You also need to consider the following if your system includes a printer.

- If the printer is small, you might have adequate space for it on your work surface.
- If the printer is large, you should place it on a separate stand in an area where the stand will not be bumped easily.
- If your printer uses continuous-feed paper, you need room behind the printer for the paper path.

Before You Continue Unpacking Cartons

Before you unpack any component of your system, you need to ensure that all cartons are free of damage.

Inspecting the Cartons for Damage

Examine the cartons that contain the system components for obvious signs of damage.

If a carton appears to be damaged, leave it unopened and immediately notify your carrier or return the carton and its contents to the place of purchase.

If You Discover Damage Later

This manual tells you when to unpack each carton. As you unpack a carton, examine its contents to ensure that all items are intact.

If an item is missing or appears to be damaged, immediately contact your place of purchase.

Storing the Packing Materials

As you unpack the cartons for each system component, place the packing materials away from the area where you will be assembling the system. Styrofoam and plastic packing materials are sources of static electricity. Static electricity can damage sensitive system components.

It is a good idea to save all of the original packing materials in a dry place. You will need to use them if you move or store your system or if you need to ship a component for service.

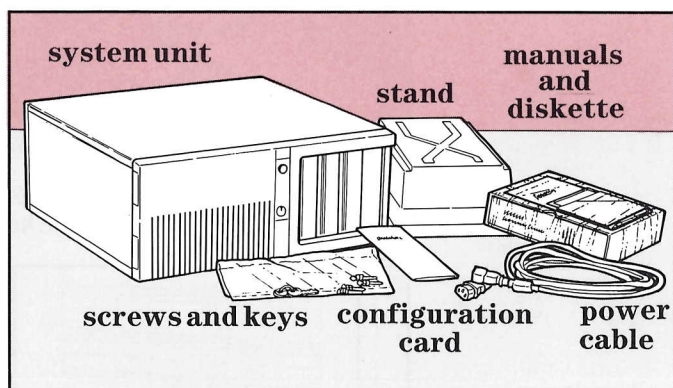
Unpacking the Remainder of the System Unit Carton

You should continue unpacking the carton that contains the system unit. Your system unit may already have some optional components installed.

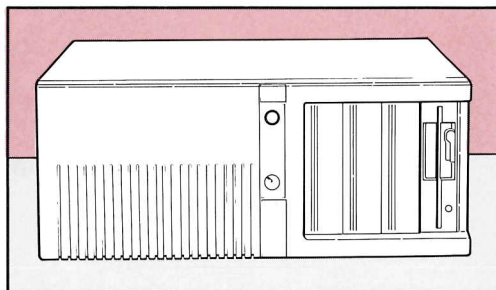
Removing the Contents

To unpack the system unit carton, follow these steps.

1. Clear an area on your work surface where you can temporarily place the system unit.
2. Place a towel on the work surface to protect it from scratches.
3. Remove the contents remaining in the system unit carton. (The *Diagnostics User's Guide* and the Diagnostics diskette are wrapped with the *Operating Instructions* manual.)



4. Place the system unit on the work surface with the front of the unit toward you and the floppy drive to your right.



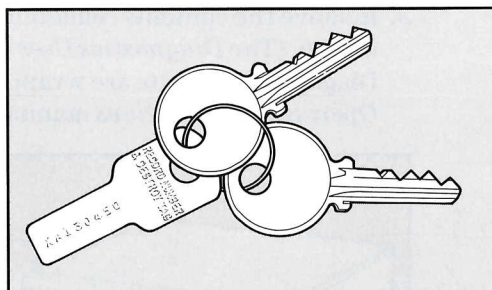
Unlocking the System Unit

Before you can remove the system unit front panel and cover to install options, you need to unlock the security lock on the front of the system unit. (Information on obtaining additional keys is contained in the *Operating Instructions* manual.)

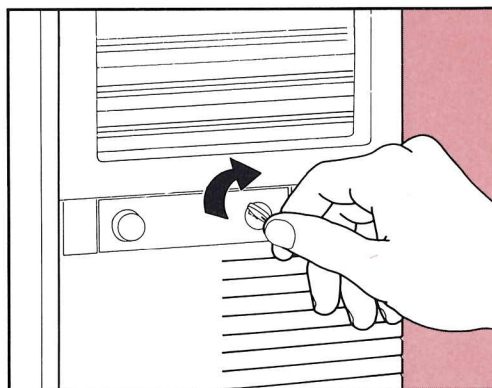
Procedure

To unlock the system unit, follow these steps.

1. Locate the keys in the plastic bag that came in the system unit carton.
2. Remove the tag containing the key number and keep a record of the number in a safe place.



3. Insert the key into the security lock on the front of the system unit and turn the key clockwise.



4. Remove the key from the security lock and store it in a safe place.

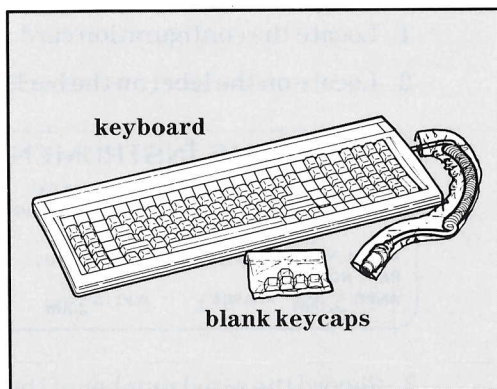
Unpacking the Keyboard Carton

You are now ready to unpack your keyboard.

Removing the Contents

To unpack the keyboard carton, follow these steps.

1. Remove the contents from the carton.



2. Store the bag of blank keycaps in a safe place.
3. Unwrap the keyboard cable and set the keyboard aside until you are ready to install it.

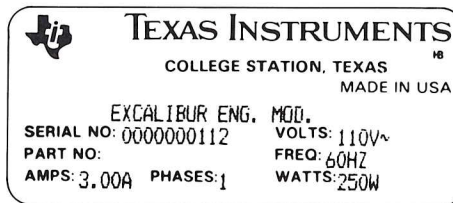
Recording Serial Numbers

The configuration card that was packed with your system unit can help you maintain an accurate record of essential information about each component of your system. Use a pencil to make all entries on the configuration card so you can change them easily if you rearrange or add components later.

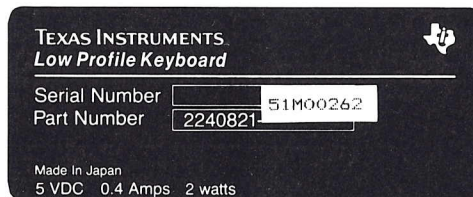
Procedure

To record the serial numbers of your keyboard and system unit on the configuration card, follow these steps.

1. Locate the configuration card.
2. Locate on the label on the back of the system unit.



3. Record the serial number of the system unit on the configuration card.
4. Locate the label on the bottom of the keyboard.



5. Record the serial number of the keyboard on the configuration card.

Organizing BUSINESS-PRO Options

You may have several options designed specifically for the BUSINESS-PRO Computer. You need to sort your BUSINESS-PRO options using the category printed on the label of each box. The categories determine which installation chapters you will need.

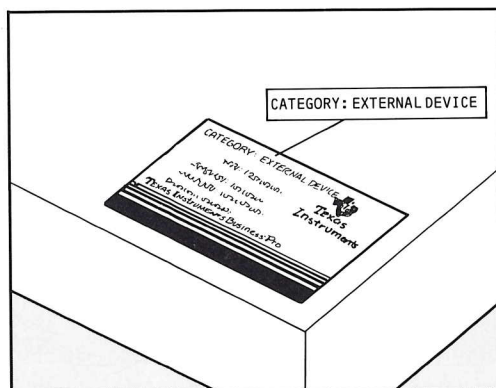


CAUTION

Handling an option before you install it can expose the option to damaging static electricity, especially if you are in a carpeted area. To prevent damage to an option, do not open the carton until you are directed to do so.

Where to Look for Special Markings

Each carton that contains a BUSINESS-PRO option is specially marked with a category to help you identify the type of option it contains. The category allows you to sort the options according to type without opening the cartons.



Sorting the BUSINESS-PRO Options

Sort your BUSINESS-PRO options into the following categories.

- System Board Option
- TI RAM Modules
- Board
- Drive
- Drive and Board
- External Device

Organizing BUSINESS-PRO Compatible Options

BUSINESS-PRO compatible options are options that are not designed specifically for the BUSINESS-PRO Computer but that are compatible with it. If you have BUSINESS-PRO compatible options, you need to sort them before you begin installation. The categories determine which installation chapters you will need.

Ways to Determine the Type of Option

Because cartons for BUSINESS-PRO compatible options are not specially marked with a category to help you sort them, you need to use one of the methods described here.

You can identify the type of each BUSINESS-PRO compatible option by:

- Using the name printed on the carton that contains the option.
- Opening the carton and looking at the option if the name does not help.

Using the Name on the Carton

Look at the name printed on each carton containing a BUSINESS-PRO compatible option. If possible, use the names to sort the options into the following categories.

- System Board Option
- Board
- Drive
- Drive and Board
- External Device



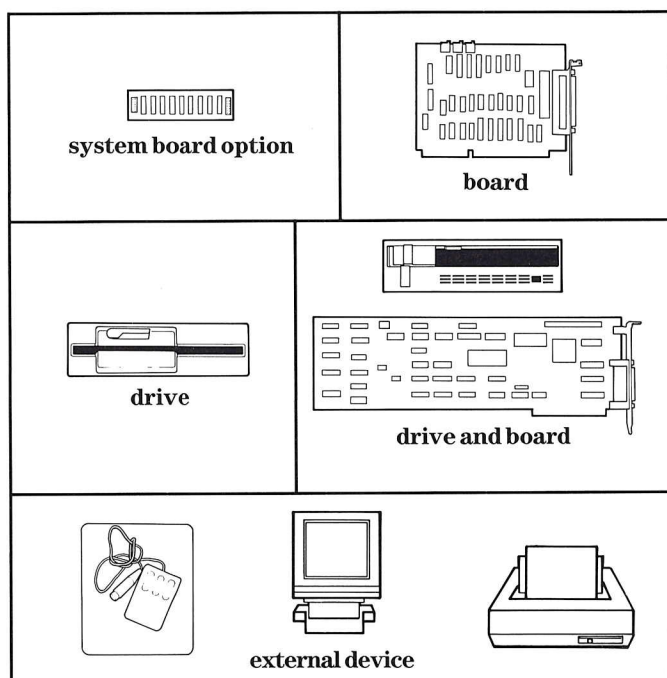
CAUTION

Handling an option before you install it can expose the option to damaging static electricity, especially if you are in a carpeted area. To prevent damage to an option, follow the steps on the next page.

Looking Inside the Carton

To identify any remaining options and sort them into categories, follow these steps.

1. Open the cartons containing the options and remove only as much packing material as necessary to see what the options look like. If an option is packed in an antistatic bag, leave it in the bag.
2. Identify options by comparing them with the illustrations below and sort the options into the appropriate categories.



Determining Your Setup Tasks

Now that you have separated your options into categories, review this chart to determine which installation chapters you need to read. Then perform all of the installation procedures that apply to you. (Installing some options may require that you change a switch setting on the system board; therefore, you may have additional chapters to read.)

	Opening the System Unit	Installing System Board Options and TI Memory	Installing Drives and Boards	Closing the System Unit	Readying the System Unit for Final Placement	Connecting External Devices	Completing the Initial Setup
FOR INSTALLING	3	4	5	6	7	8	9
System Board Option	*	*		*	*		*
TIRAM Modules	*	*		*	*		*
Board	*		*	*	*		*
Drive	*		*	*	*		*
External Device					*	*	*

Checklist for Your Installation

Check off those chapters that you need to read to install the options you have.

3	4	5	6	7	8	9

Chapter 2: Preparing to Add an Option

Use this chapter only if you are adding an option to a system that has been set up and that you have been using. This chapter explains how to categorize options by type, provides general information about adding each type of option, and tells which installation procedures to use.

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	Positioning the System Unit	2-8
	Removing the System Unit Stand	2-9

Categorizing a BUSINESS-PRO Option

You can easily categorize a BUSINESS-PRO option so you will know which installation procedures apply to you when you add the option to your system.

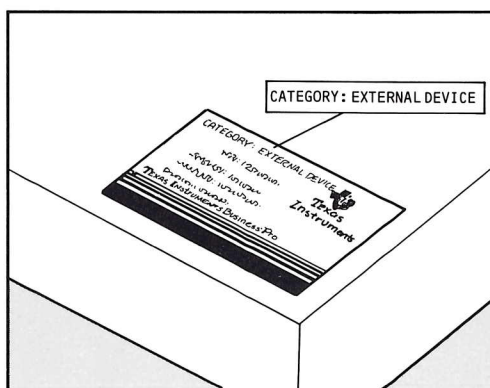


CAUTION

Handling an option before you install it can expose the option to damaging static electricity, especially if you are in a carpeted area. To prevent damage to an option, do not open the carton until you are directed to do so.

Where to Look for Special Markings

Each carton containing a BUSINESS-PRO option is specially marked with a category. This category helps you identify the type of option it contains without opening the carton.



**Determining the
Category of
Option**

Categorize the BUSINESS-PRO option you are adding according to the following list.

- System Board Option
- TIRAM Module
- Board
- Drive
- Drive and Board
- External Device

Categorizing a BUSINESS-PRO Compatible Option

A BUSINESS-PRO compatible option is an option that is not designed specifically for the BUSINESS-PRO Computer but that is compatible with it. You need to categorize such an option so you know which installation procedures to follow when you add the option to your system.

Ways to Determine the Type of Option

Because cartons for BUSINESS-PRO compatible options are not specifically marked with a category, you need to use one of the methods described here.

You can identify the type of BUSINESS-PRO compatible option you are installing by:

- Using the name printed on the carton.
- Opening the carton and looking at the option if the name does not help.

Using the Name on the Carton

Look at the name printed on the carton containing the option. If possible, use the name to place the option in one of these categories.

- System Board Option
- Board
- Drive
- Drive and Board
- External Device



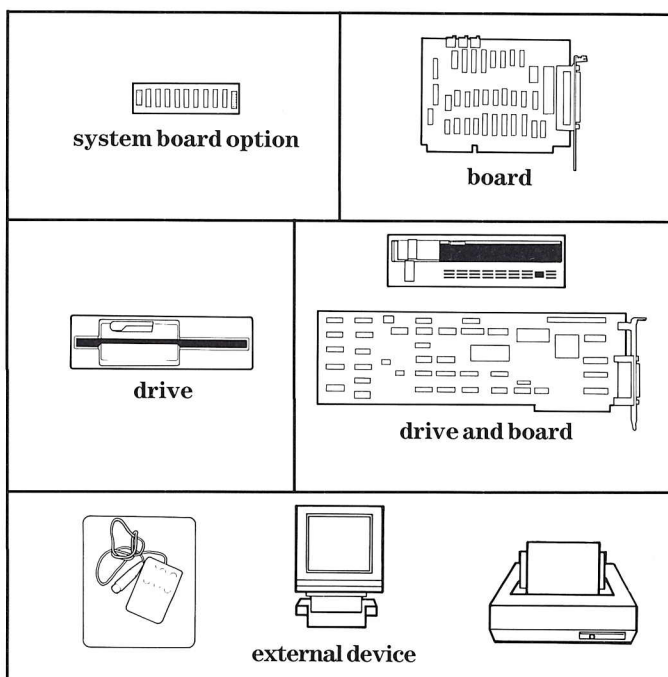
CAUTION

Handling an option before you install it can expose the option to damaging static electricity, especially if you are in a carpeted area. To prevent damage to an option, follow the steps on the following page.

Looking Inside the Carton

If you have been unable to identify the category of the option you are adding, follow these steps.

1. Open the carton and remove only as much packing material as necessary to see what the option looks like. If the option is packed in an antistatic bag, leave it in the bag.
2. Identify the option by comparing it with the illustrations below and place the option in the appropriate category.



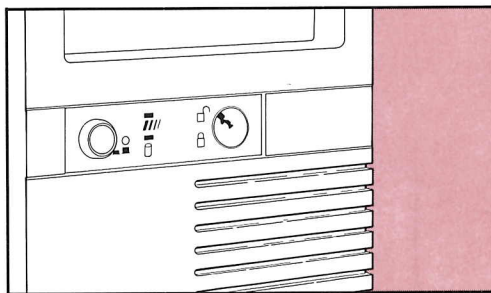
Before You Begin

Because your system is already set up, you should use the information here before you add the option.

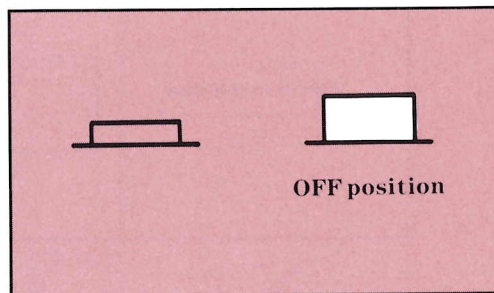
Preliminary Steps

To prepare to add the option, follow these steps.

1. Turn off all external devices.
2. Make sure the security lock on the system unit is in the unlocked position.



3. Make sure to push the **ON/OFF** button on the system unit to the **OFF** position.



4. Unplug the power cables for the system unit and all external devices.

Determining Your Installation Tasks

Review this chart to determine which installation procedures to read. Then, perform all of the installation procedures that apply to you in sequence. (Adding some options may require that you change a switch setting on the system board; therefore, you may need to read additional chapters.)

FOR INSTALLING	Remainder of Chapter 2	Opening the System Unit	Installing System Board Options and TI Memory	Installing Drives and Boards	Closing the System Unit	Readying the System Unit for Final Placement	Connecting External Devices	Completing the Initial Setup	Completing the Addition of an Option
	3	4	5	6	7	8	9	10	
System Board Option	*	*	*		*	*			*
TI RAM Modules		*	*		*	*			*
Board	*	*		*	*	*			*
Drive	*	*		*	*	*			*
External Device						*			*

Checklist for Your Installation

Check off those chapters that you need to read to install the option you are adding.

	3	4	5	6	7	8	9	10	

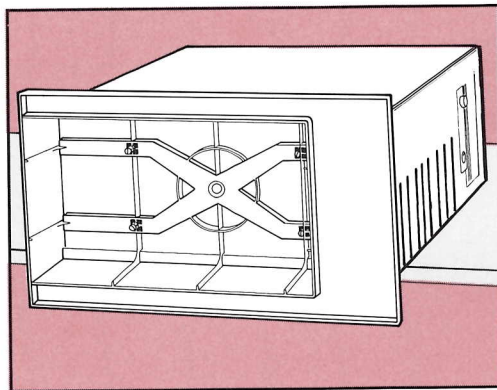
Positioning the System Unit

To open the system unit to add a system board option, an option board, or drive, you need to position the system unit horizontally on the work surface. You may also want to remove the system unit stand. If you are adding only TI RAM Modules on the High Capacity RAM Expansion board, you can leave the system in a vertical position.

Procedure

To position the system unit on the work surface, follow these steps.

1. Clear an area on your work surface where you can temporarily place the system unit and an unpacked option.
2. Cover the work surface with a towel or newspaper to protect it from scratches.
3. Label each cable to indicate where it connects to the back of the system unit.
4. Disconnect the cables and set them aside.
5. Position the system unit on your work surface so the stand hangs over the front edge.



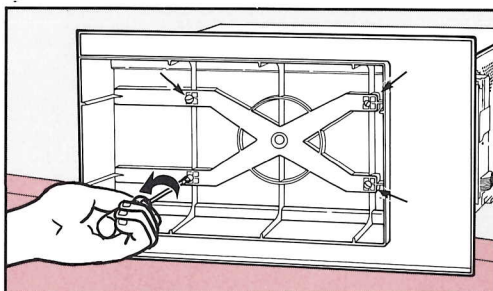
Removing the System Unit Stand

The system unit stand comes off with the system unit cover. You do not have to detach it separately. If, however, you find it easier to remove and reinstall the system unit front panel and cover without having the stand attached, you should remove it now and reorient the system unit on the work surface.

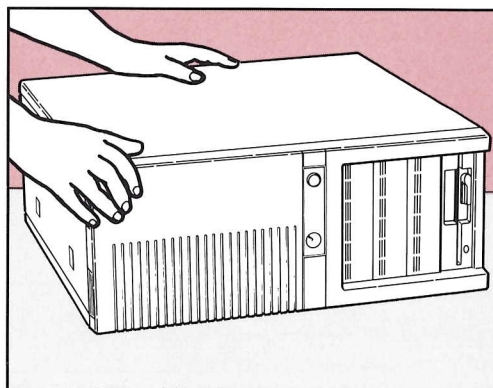
Procedure

To remove the system unit stand, follow these steps.

1. Use a medium-sized, flat-bladed screwdriver to remove the four screws from the bottom of the stand.



2. Set the stand and four screws aside until you finish installing the option.
3. Rotate the system unit so the front of the unit is toward you and the floppy drive is to your right.



Chapter 3: Opening the System Unit

Use all of the procedures in this chapter if you are installing system board options, TI RAM Modules on the RAM expansion board, option boards, or drives. (If you are installing only the TI RAM Modules, use the instructions on page 3-3 only.)

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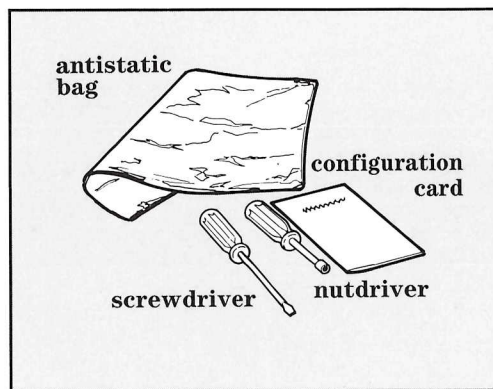
Preparing to Open the System Unit

You will be installing options inside the system unit. Before you open the system unit, you need to perform some preparatory steps.

Materials Required

Before you open the system unit to install an option, you need to gather the following materials.

- A 1/4-inch nutdriver and a medium-sized, flat-bladed screwdriver
- Antistatic bag or piece of aluminum foil on which to set an unpacked option to prevent damage from static electricity
- Configuration card



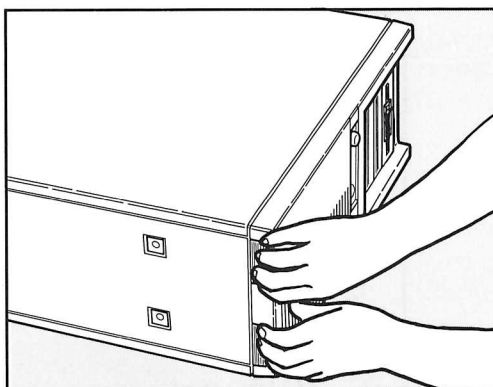
Removing the System Unit Front Panel

To open the system unit, you first need to remove the front panel.

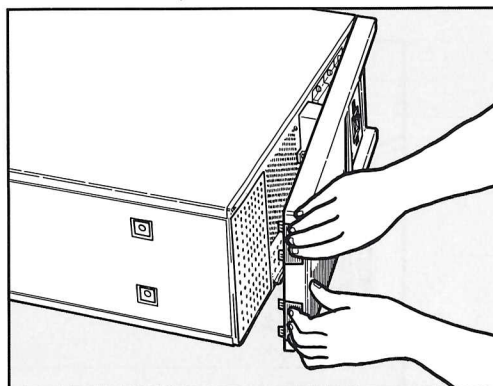
Procedure

To remove the front panel, follow these steps.

1. Press in firmly on the notched areas at the bottom end of the front panel.



2. Swing the front panel out and away to remove it from the system unit.



3. Set the front panel aside.

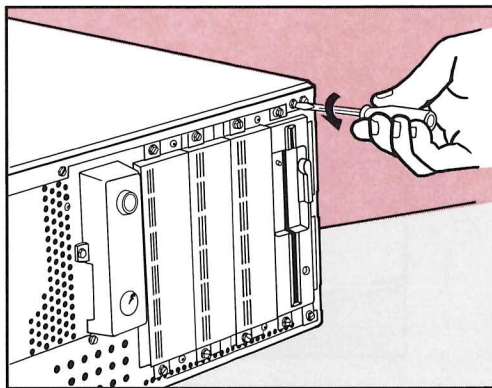
Removing the System Unit Cover

Remove the system unit cover so you have access to the inside of the system unit to install options. You need to remove the cover if you are installing system board options, option boards, or drives. (You do not need to remove the system unit cover if you are installing only TIRAM Modules on the High Capacity RAM Expansion board.)

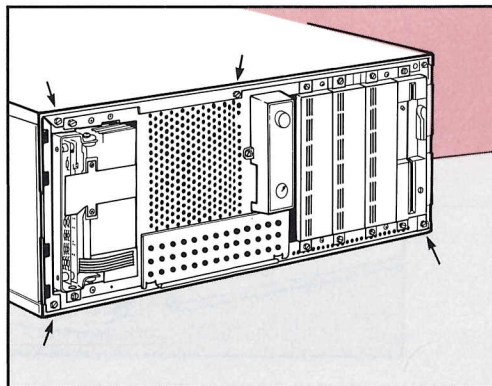
Procedure

Five screws hold the cover in place. To remove the cover, follow these steps.

1. Remove the second screw from the end of the system unit, as shown.

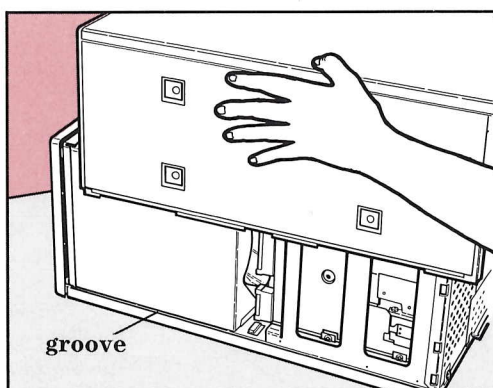
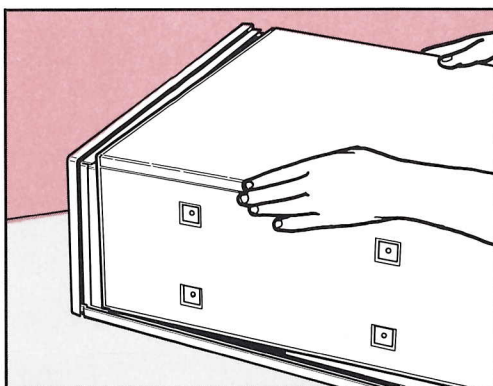


2. Remove the remaining four screws. Set all screws aside.



**Procedure
(Continued)**

3. Grasp the cover at each end and pull it about 1 inch toward the front of the system unit; then lift it up and off.



4. Set the cover aside.

Chapter 4: Installing System Board Options and TI Memory

Use the information in this chapter if you are installing a numeric coprocessor or 128 Kb RAM Expansion on the system board or if you are installing TI RAM modules on the High Capacity RAM Expansion board. If you are installing only the High Capacity RAM Expansion Kit or 512 Kb RAM Expansion, begin on page 4-22.

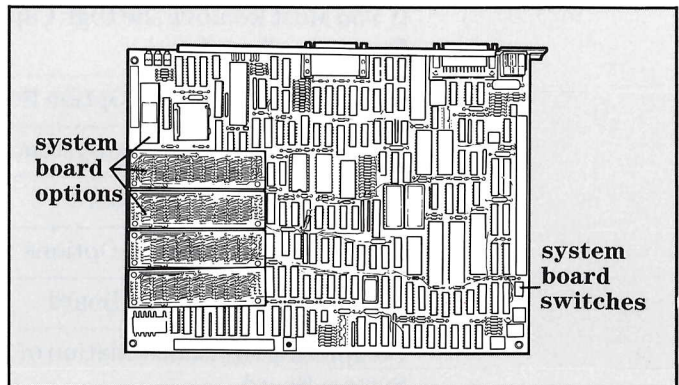
Table of Contents	General Information About System Board Options	4-2
	General Information About System Board Switches	4-3
	Determining If You Must Remove Other Options	4-4
	If You Must Remove the High Capacity RAM Expansion Board	4-5
	If You Must Remove an Option Board	4-6
	Preparing to Remove the System Board	4-7
	Removing the System Board	4-12
	Installing System Board Options	4-14
	Reinstalling the System Board	4-15
	Completing the Reinstallation of the System Board	4-16
	Reinstalling Option Boards	4-20
	Reinstalling the High Capacity RAM Expansion Board	4-21
	General Information About TI Memory	4-22
	Installing TI Memory	4-23
	Recording Addresses for the TI RAM Modules	4-24
	Ensuring That TI Memory Does Not Conflict With Other Memory	4-25

General Information About System Board Options

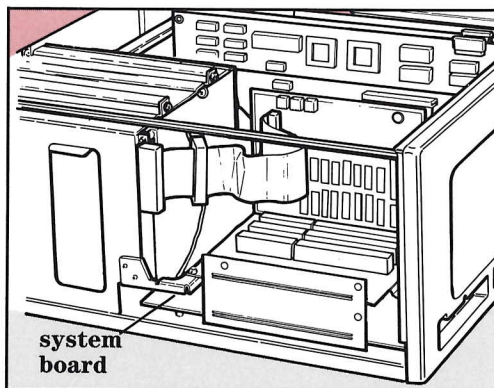
Use this information to learn where system board options are installed and what the system board switches control. You may need to set one of the switches if you are installing or removing a BUSINESS-PRO compatible external device or if you are installing or removing the 128 Kb RAM Expansion Kit.

Where You Install System Board Options

A system board option is a device (usually an integrated-circuit chip) that you install on the BUSINESS-PRO system board. You have to remove the system board from the system unit to install a system board option or to change settings of system board switches.



The system board is located near the bottom of the system unit when the system unit rests horizontally on the work surface.



General Information About System Board Switches

The installation of some options requires changing the setting of a switch on the system board. The chart provides information on each switch on the system board and the conditions for changing switch settings. You will be instructed to set these switches at the time you install the option.

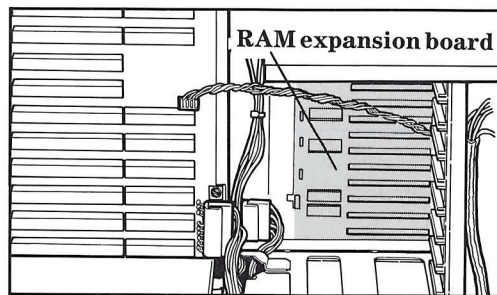
Switch	Function
Display Unit Switch: 1 Factory Setting: ON Controls the use of color or monochrome BUSINESS-PRO compatible display units	If left in its ON position, activates a CRT controller for a color BUSINESS-PRO compatible display unit If changed to its OFF position, activates a CRT controller for a monochrome BUSINESS-PRO compatible display unit
Parallel Switch: 2 Factory Setting: ON Controls the device identification, or port setting, or the built-in parallel connector on the system unit	If left in its ON position, makes port 1 the device identification for the built-in parallel connector If changed to its OFF position, makes port 2 the device identification for the built-in parallel connector
Serial Switch: 3 Factory Setting: ON Controls the device identification, or port setting, of the built-in serial connector on the system unit	If left in its ON position, makes port 1 the device identification for the built-in serial connector If changed to its OFF position, makes port 2 the device identification for the built-in serial connector
RAM Switch: 4 Factory Setting: OFF Controls the circuits for the 128 Kb RAM system board option	If left in its OFF position, disables the circuits to the 128 Kb RAM system board option If changed to its ON position, enables you to use the 128 Kb RAM system board option

Determining If You Must Remove Other Options

Before removing the system board, you need to determine if any components are blocking its removal. If you determine that a component is in the way, you can remove the component using the procedures described on the next three pages.

Determining If You Must Remove the RAM Expansion Board

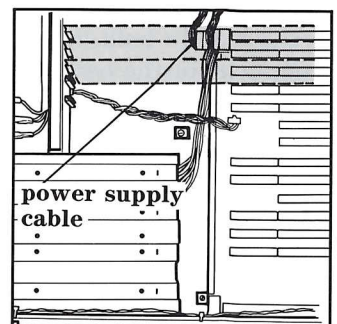
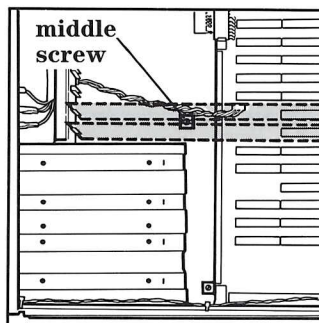
If the High Capacity RAM Expansion board is installed in your system unit, you must remove the board. Compare your system unit with the one in the illustration below to see if you have the RAM expansion board.



Determining If You Must Remove an Option Board

Option boards installed in slots 7 and 8 may interfere with removing the middle screw on the system board. Option boards installed in option slots 1, 2, and 3 may interfere with disconnecting the power supply cable from the system board.

If you have option boards installed in any of these slots, you may need to remove the option boards before you can remove the system board.



If You Must Remove the High Capacity RAM Expansion Board

Use this information to remove the High Capacity RAM Expansion board in order to remove the system board.



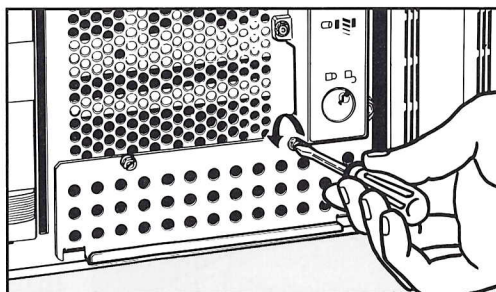
CAUTION

Static electricity can damage the RAM expansion board and RAM modules, especially if you are in a carpeted area. While handling the RAM expansion board, keep one hand on the metal frame of the system unit.

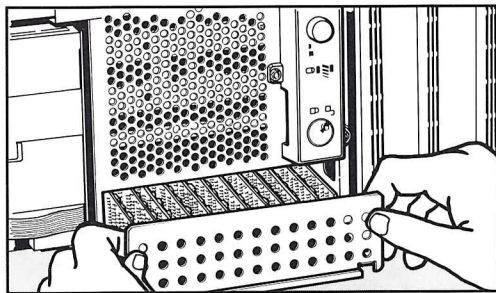
Removing the RAM Expansion Board

To remove the RAM expansion board, follow these steps.

1. Remove the two screws on the front of the system unit that hold the RAM expansion board in place.



2. Check to make sure cables inside the system unit have not become entangled with a RAM module.
3. Slide the RAM expansion board out.



4. Set the board aside on an antistatic bag or a piece of aluminum foil.

If You Must Remove an Option Board

Use this information if you have determined that you need to remove an option board that is obstructing either the middle screw on the system board or the power supply connector on the system board. You may want to reorient the system unit so that you can reach the back of the system unit easily.



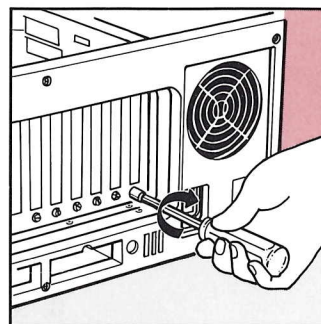
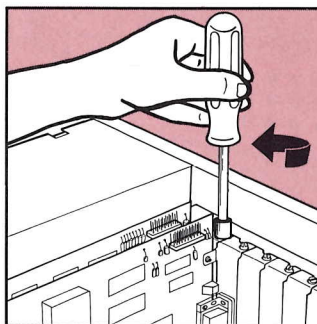
CAUTION

Static electricity can damage boards, especially if you are in a carpeted area. While handling a board, keep one hand on the metal frame of the system unit.

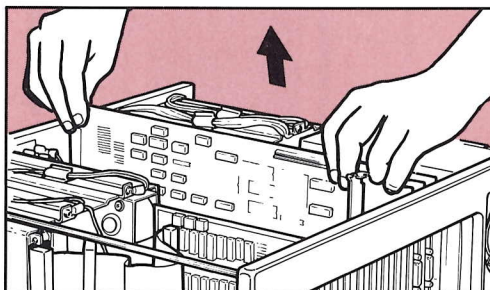
Removing an Option Board

To remove the option board that is blocking access to the screw on the system board, follow these steps.

1. If a cable is attached to an internal or external connector on the option board, make a note of how the cable is attached; then disconnect it from the option board.
2. Remove the two screws at the back of the system unit that secure the option board. (Some boards have only one screw.)



3. Pull the option board out.



4. Set the option board aside on an antistatic bag or piece of aluminum foil.

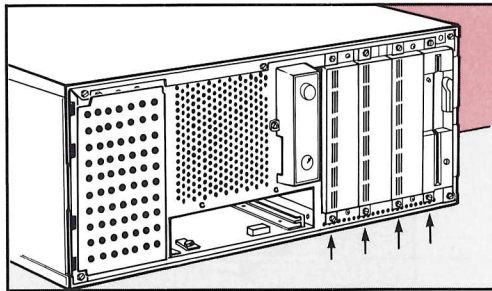
Preparing to Remove the System Board

To remove the system board, you must perform several preparatory steps. The first step is to disconnect any drives installed at the top of the system unit.

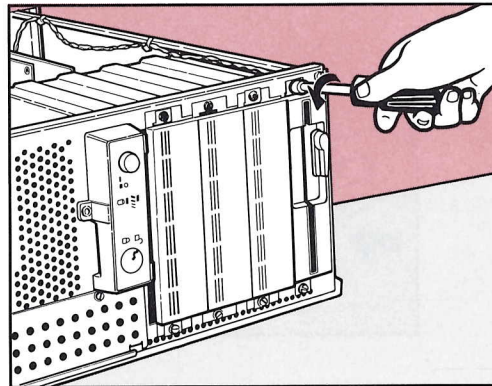
Disconnecting Drives

To disconnect the drives installed at the top of the system unit, follow these steps.

1. Identify any drives located in the four positions adjacent to the system board. (A blank plate may cover a half-height Winchester drive.)



2. Locate the retaining clips that hold the drives in place. Note how these clips are positioned; you will have to reinstall them when you secure the drive.
3. Remove the screws that secure the retaining clips to the system unit.



4. Set the screws and clips aside. If the drive had a cover plate, also set the cover plate aside.

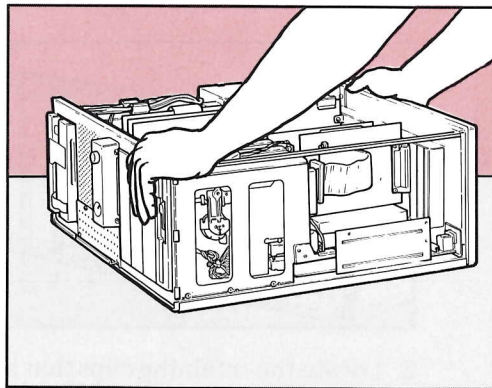
Preparing to Remove the System Board (Continued)

After you disconnect the drives, you need to perform additional preparatory procedures before you can install a system board option. You must reorient the system unit and pull the drives partially out of the system unit. Then, you need to disconnect from the system board the cable to the power supply.

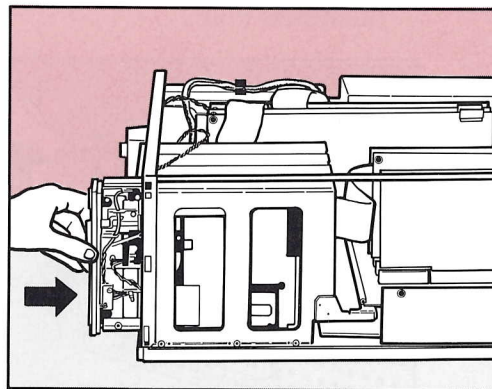
Positioning the System Unit

To position the system unit correctly, follow these steps.

1. Rotate the system unit so that the top of the system unit is toward you.



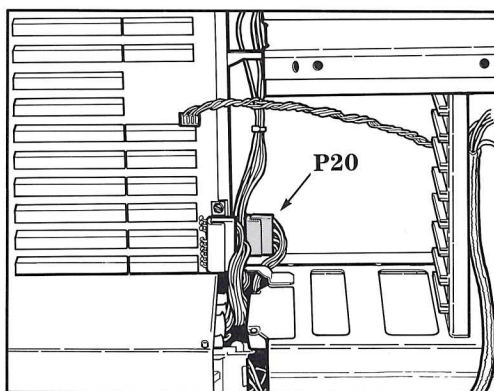
2. Pull each of the drives about two inches out of the system unit.



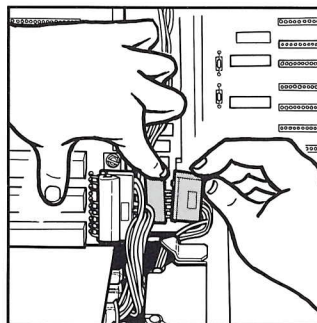
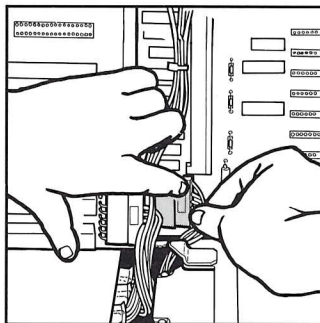
Disconnecting the Power Supply Cable

To disconnect the cable to the power supply, follow these steps.

1. Locate the power supply connector at the far end of the system board. The power supply connector is labeled P20.



2. Lift the plastic lip that covers the power supply connector and pull the connector out.



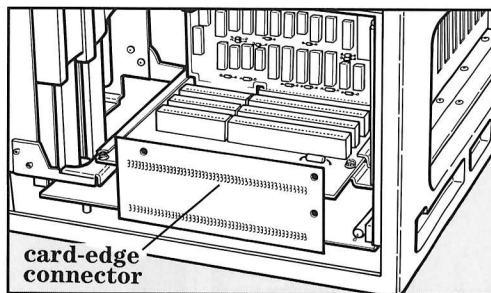
Preparing to Remove the System Board (Continued)

The final preparatory procedures necessary to remove the system board are to remove the card-edge connector and to disconnect the cable that connects the battery to the system board.

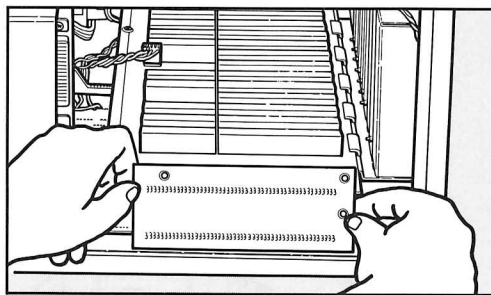
Removing the Card-Edge Connector

To remove the card-edge connector from the system board, follow these steps.

1. Locate the card-edge connector at the end of the system board.



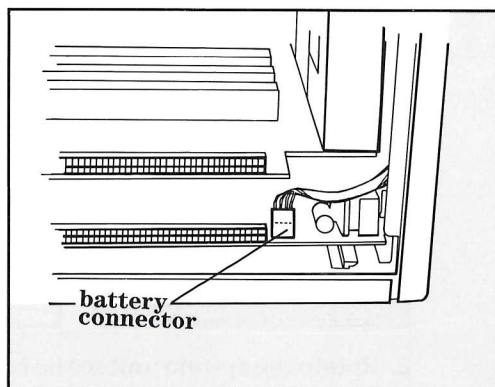
2. Remove the card-edge connector gently by alternately pulling each end of the board.



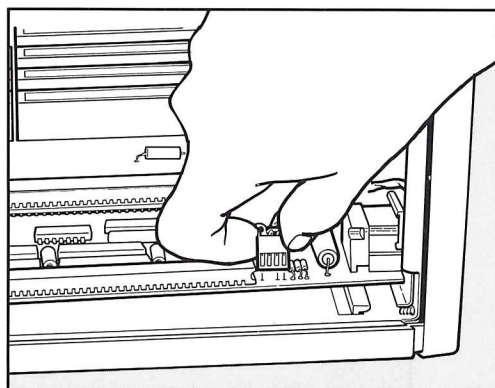
Disconnecting the Battery Cable

To disconnect the battery cable, follow these steps.

1. Locate the connector on the system board that connects the battery cable to the system board.



2. Pull straight up on the battery connector to disconnect it from its pins on the system board.



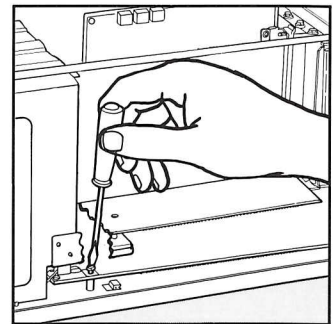
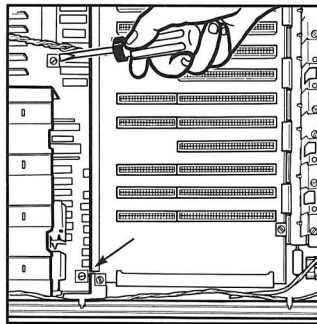
Removing the System Board

After you have completed all preparatory procedures, you are ready to remove the system board.

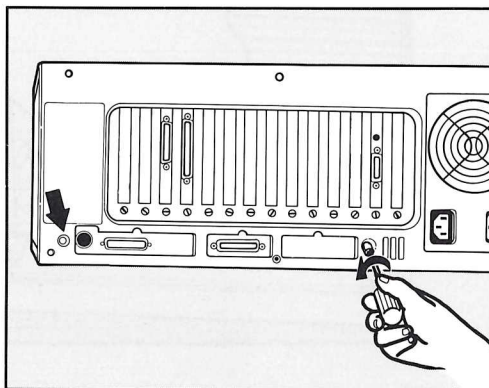
Removing the Board

To remove the system board, follow these steps.

1. Remove the two inside screws that hold the system board in place and set them aside.

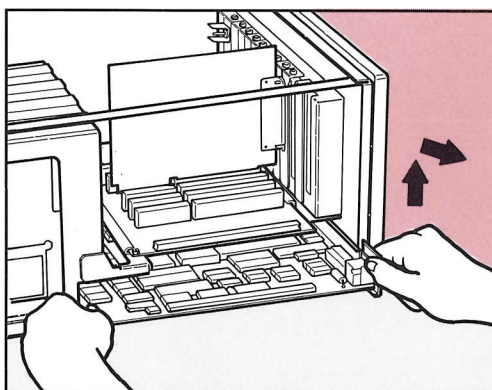


2. Rotate the system unit so the back of the unit is toward you.
3. Remove the two screws that connect the system board to the back of the system unit and set them aside.



**Removing the
System Board
(Continued)**

4. Rotate the system unit so the top of the unit is toward you.
5. Lift the system board slightly to raise it above the ridge at the bottom of the system unit; then, slide the board out of the system unit.



6. Set the system board aside on an antistatic bag or a piece of aluminum foil.

Installing System Board Options

Now that you have removed the system board, you can install each system board option you have.

Installing the Options

Install each system board option according to the installation procedures in the manual that came with the option.

When you have finished installing each system board option you have, make sure you record the name of the option and any other important information on the configuration card. Then, proceed to the next page of this manual.

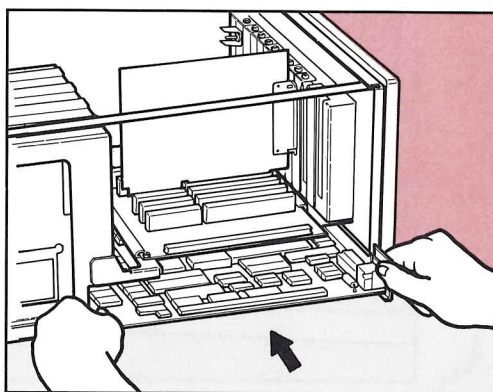
Reinstalling the System Board

Now that you have installed the system board options you have, you need to reinstall the system board.

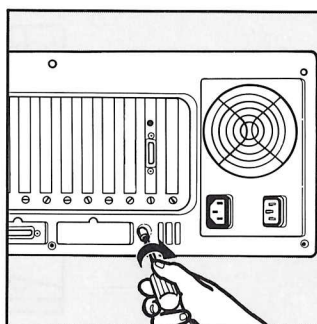
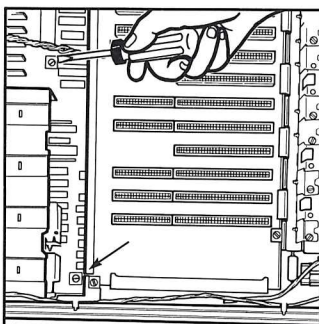
Reinstalling the Board

To reinstall the system board, follow these steps.

1. Slide the system board into the system unit. The long connector on the edge of the board should be toward you.



2. Insert and tighten the four screws that secure the system board.



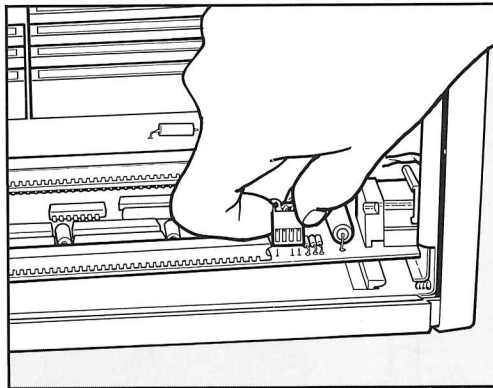
Completing Reinstallation of the System Board

Completing reinstallation of the system board requires two main procedures. The first procedure presented on these pages, includes reconnecting the battery cable, the card-edge connector, and the cable to the power supply. The second procedure follows on page 4-18.

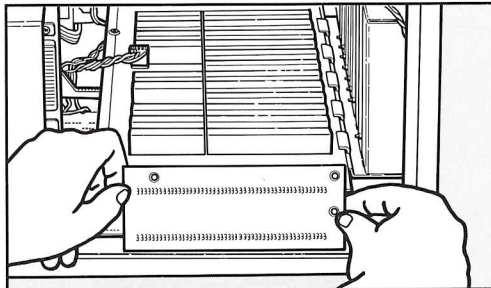
Reconnecting the System Board

To reconnect the system board, follow these steps.

1. Reconnect the battery cable to the 3-pronged connector at the end of the system board. The cable is designed to fit one way.

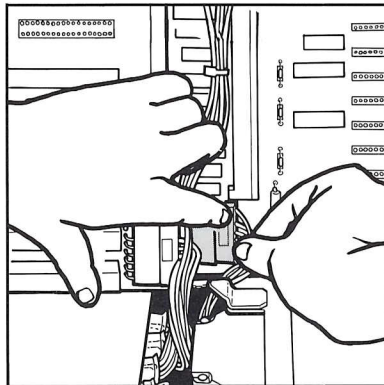


2. Reattach the card-edge connector to the end of the system board. The connector is designed to fit one way.



**Reconnecting
the System
Board
(Continued)**

3. Reconnect the cable from the power supply to its connector at the far end of the system board.



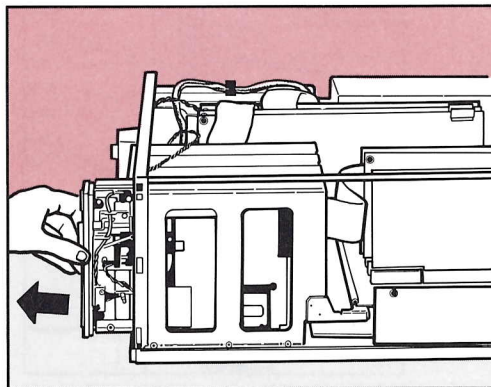
Completing Reinstallation of the System Board (Continued)

The second procedure required to complete reinstallation of the system board includes reconnecting the drives you partially pulled out and repositioning the system unit.

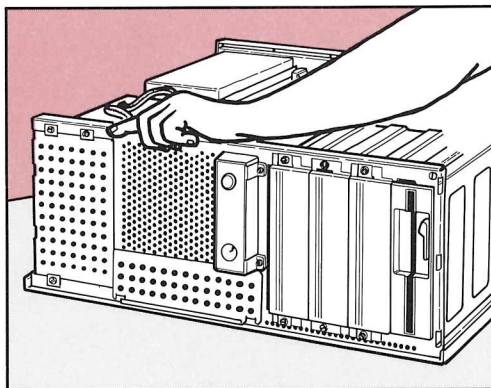
Reconnecting the Drives

To reconnect the drives, follow these steps.

1. Slide each of the drives into the system unit.

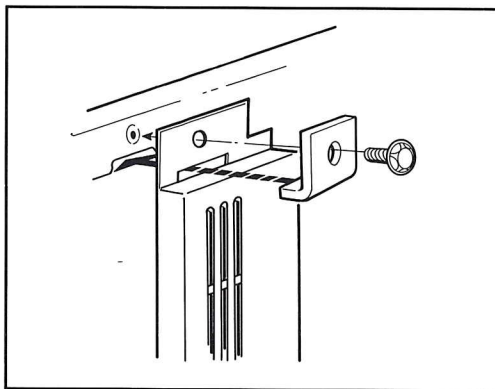


2. Rotate the system unit so that the front of the system unit is toward you.



**Reconnecting
the Drives
(Continued)**

3. Reinsert the retaining clips and screws for each drive you had partially pulled out.



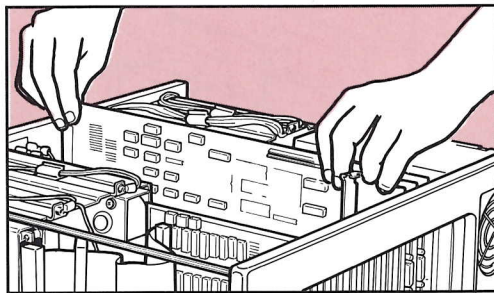
Reinstalling Option Boards

Use these procedures if you removed any option boards that were obstructing removal of the system board. You may want to reorient the system so that you can easily reach the back of the system unit.

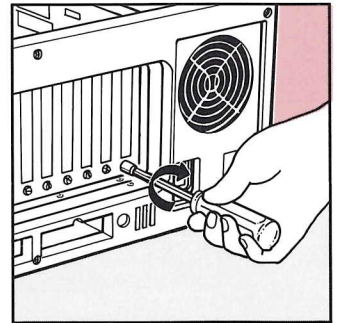
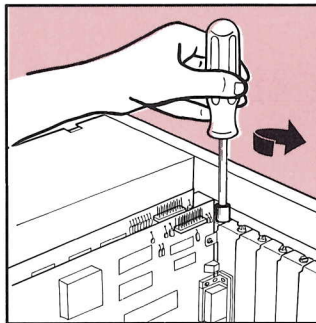
Reinstalling the Board

To reinstall an option board, follow these steps.

1. Align the option board with the guiderails.
2. Slide the option board into the system unit until it is fully seated in the connector on the system board.



3. Insert and tighten the two screws at the back of the system unit that secure the board. (Some boards have only one screw.)



4. Reconnect any cables that you disconnected from the option board.

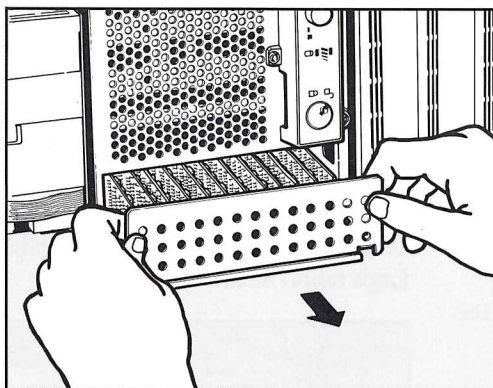
Reinstalling the High Capacity RAM Expansion Board

Use these procedures if you removed the High Capacity RAM Expansion board only to install a system board option. If you are also planning to install TI RAM modules on the High Capacity RAM Expansion board, do not reinstall the RAM expansion board at this time.

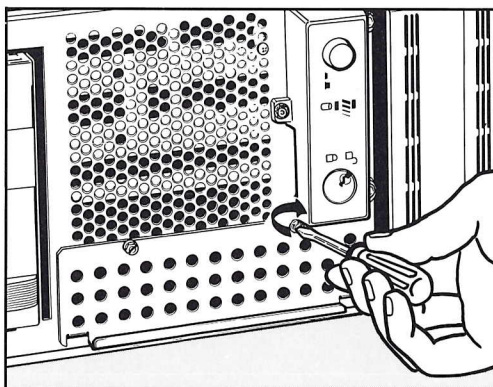
Reinstalling the RAM Expansion Board

To reinstall the RAM expansion board, follow these steps.

1. Align the RAM expansion board with the guiderails at the front of the system unit.
2. Slide the RAM expansion board into place. Make sure that the board does not interfere with any cables inside the system unit.



3. Insert and tighten the two screws that hold the RAM expansion board in place.

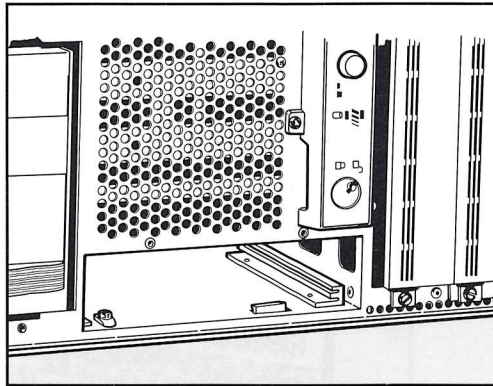


General Information About TI Memory

TI memory consists of the High Capacity RAM Expansion board and TI RAM Modules.

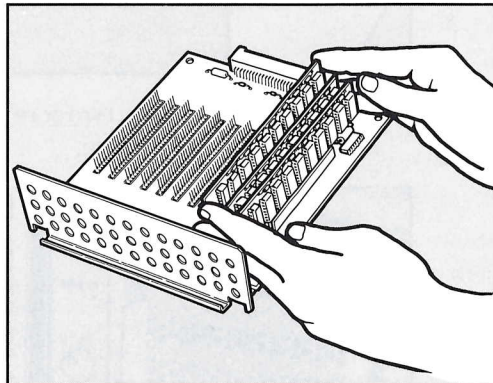
Where You Install the RAM Expansion Board

The High Capacity RAM Expansion board installs in a special location at the front of the system unit.



Where You Install TI RAM Modules

TI RAM Modules install on the High Capacity RAM Expansion board.



Installing TI Memory

Use these instructions to install the High Capacity RAM Expansion Kit or additional TI RAM Modules.

Installing the Memory

To install TI memory, follow instructions in the appropriate manual.

- If you have not yet installed the RAM expansion board, use the manual provided in the High Capacity RAM Expansion Kit.
- If the RAM expansion board is installed, use the manual provided in the 512 Kb RAM Expansion Kit.

When you finish installing TI memory, return to this manual and record the information on the configuration card using the chart on the next page. Then, proceed to your next installation task.

Recording Addresses for the TI RAM Modules

Because memory addresses are preset for TI RAM Modules installed on the High Capacity RAM Expansion board, you do not have to change address settings on the modules when you add them. Each time you add RAM modules to your system, however, you do need to record the memory addresses and the total RAM on your configuration card.

Memory Addresses and Total RAM

The chart provides two types of information—the high address for each pair of RAM modules and the total RAM available in your system. Locate on the chart the number of pairs of modules installed on your RAM expansion board. Record the memory address for that pair on your configuration card.

If you have installed the 128 Kb RAM Expansion Kit on the system board, the total RAM to be entered on your configuration card is different from the number on the chart. If you have installed the 128 Kb RAM system board option, find the total RAM for the pairs of modules you have installed and add 128 Kb to that number.

Pair	Pins Used	High Address	Total RAM
1st	J1, J2	17FFFF	1024 Kb
2nd	J3, J4	1FFFFFF	1536 Kb
3rd	J5, J6	27FFFF	2048 Kb
4th	J7, J8	2FFFFFF	2560 Kb
5th	J9, J10	37FFFF	3072 Kb
6th	J11, J12	3FFFFFF	3584 Kb

Ensuring That TI Memory Does Not Conflict With Other Memory

You must ensure that addresses occupied by memory on a previously installed option board are not the same as addresses occupied by installed TI RAM Modules. If your system includes a memory board or a multifunction board with memory, determine the address settings on the option board and change the settings if a conflict exists.

Determining if Other Memory Will Conflict

To determine if you must change switch settings on an installed option board with memory, follow these steps.

1. Examine your configuration card to determine the high address for the RAM modules you have installed.
2. Examine the memory section of your configuration card to determine the address occupied by the option board.
3. Compare the addresses occupied by the RAM modules with the memory addresses set on the option board.
4. Make sure the low address of the option board is 1 higher than the highest address of the RAM modules.

Changing the Addresses Used by Other Boards

If you need to assign new addresses to memory on an installed board, follow these steps.

1. Use the manual supplied with the option board to determine how to set its new switch settings.
2. Record on the configuration card the new addresses to be used by the memory on the option board.
3. Change the switch settings on the option board. (If you need to remove the board to gain access to the switches, refer to pages 13-6 and 13-7 for instructions on removal of the board and changing switch settings.)
4. Add the amount of RAM on the option board to your previous total and record the new total for RAM on the configuration card.

Chapter 5: Installing Drives and Boards

Use the information in this chapter if you are installing drives or boards.

Table of Contents	Using This Chapter	5-2
	Where You Install Drives	5-4
	Planning the Locations for Your Drives	5-6
	Where You Install Boards	5-8
	Planning the Locations for Your Boards	5-10
	Completing Your Plan	5-12
	Repositioning Boards and Drives	5-14
	Installing BUSINESS-PRO Boards	5-15
	Installing BUSINESS-PRO Compatible Boards	5-16
	Installing a BUSINESS-PRO Compatible CRT Controller	5-17
	Installing a BUSINESS-PRO Compatible Parallel or Serial Board	5-18
	Installing BUSINESS-PRO Compatible Memory	5-20
	Installing BUSINESS-PRO Drives	5-22
	Installing BUSINESS-PRO Compatible Drives	5-23

Using This Chapter

Read the information here for an overview of the instructions you will be using in this chapter.

The Relationship Between Drives and Boards

This chapter includes instructions on planning the locations of drives and boards, as well as procedures for installing them.

When planning the locations of drives and boards, consider the following.

- Data and control cables for drives must be able to reach from the drives to the drive controllers.
- You will install all boards before drives. In this way drive controllers will be in place when you are ready to connect data and control cables.
- Locations you plan for either drives or boards may require that you reposition drives or boards installed previously. If so, you will be told where to find instructions for removing options that need repositioning.

**If Installing
Drives and
Boards**

If you are installing both drives and boards, use all of the instructions in this chapter. Follow the instructions in sequence.

**If Installing
Drives Only**

If you are installing drives only, follow the instructions listed below.

What to Read	Page
Where You Install Drives	5-4
Planning the Locations for Your Drives	5-6
Completing Your Plan	5-12
Repositioning Boards and Drives	5-14
Installing BUSINESS-PRO Drives	5-18
Installing BUSINESS-PRO Compatible Drives	5-19

**If Installing
Boards Only**

If you are installing boards only, follow the instructions listed below.

What to Read	Page
Where You Install Boards	5-8
Planning the Locations for Your Boards	5-10
Completing Your Plan	5-12
Repositioning Boards and Drives	5-14
Installing BUSINESS-PRO Boards	5-15
Installing BUSINESS-PRO Compatible Boards	5-16

Where You Install Drives

To determine where your drives should be located, you first need to know what types and sizes of drives you have.

Types of Drives

The three types of drives you can install in the BUSINESS-PRO Computer are:

- Floppy drive
- Tape backup
- Winchester drive

The location of a Winchester drive is also affected by its size. A Winchester drive can be:

- Half-height—about 1-1/2 inches tall
- Full-height—about 3 inches tall



CAUTION

Static electricity can damage drives, especially if you are in a carpeted area. While handling a drive, keep one hand on the metal frame of the system unit.

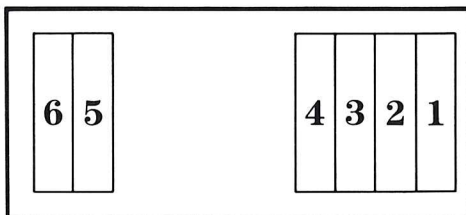
Determining Your Drive Type

The information printed on the carton may indicate the type and size of the drive. If you cannot determine the type and size by reading what is printed on the carton, you should first scan the drive manual for the information.

If necessary, open the carton containing the drive and remove only as much packing material as necessary to see what the drive looks like. Leave the drive in its antistatic bag until you are ready to install it.

Drive Positions

The system unit has six positions where you can install drives. Drive positions are numbered 1 through 6.



A half-height drive occupies a single drive position. A full-height drive occupies two adjacent drive positions.

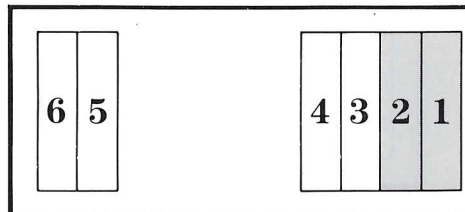
Drive position 1 is occupied in a standard BUSINESS-PRO system unit. Other drives may also be installed.

Planning the Locations of Drives

Now that you know the type and size of each drive you are installing and where drives are installed, you need to learn some rules on drive placement. You can then plan the final locations of all of your drives.

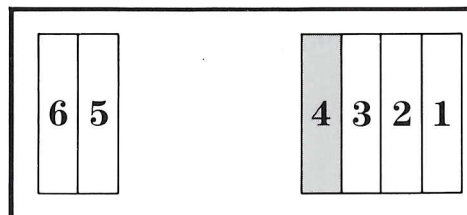
Placement of Floppy Drives

A floppy drive should be installed in drive positions 1 and 2. (The floppy controller to which floppy drives connect is positioned near those drive positions.)



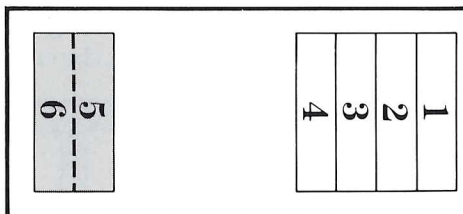
Placement of the Tape Backup

A TIBUSINESS-PRO 60 Mb Tape Backup should be located in drive position 4.



Placement of a Full-Height Winchester Drive

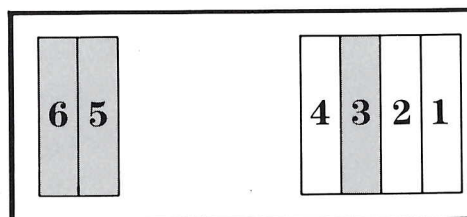
A full-height Winchester drive should be placed in drive positions 5 and 6. (This may require you to reposition a half-height Winchester drive to drive position 3.)



Placement of a Half-Height Winchester Drive

A half-height Winchester drive should be placed according to the following rules.

- Place it in drive position 6 if this is your first Winchester drive.
- Place it in drive position 5 if drive position 6 is occupied.
- Place it in drive position 3 if drive positions 5 and 6 are occupied or if you plan to occupy those drive positions.

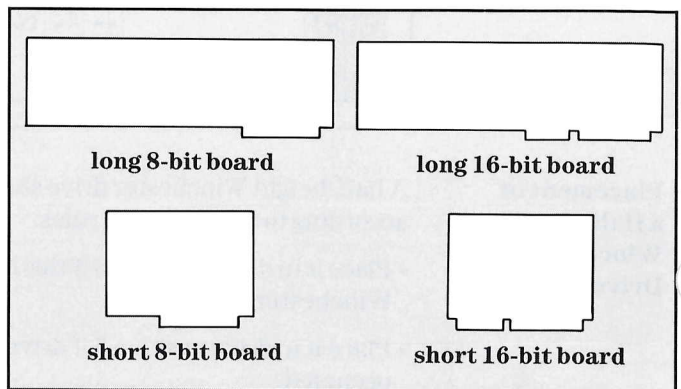


Where You Install Boards

To determine where your boards can be located, you first need to know the type of boards you are installing.

Types of Boards

A board can be long or short. Long and short boards can be further classified according to how many connectors extend from the bottom of the board. A board with a single connector is an 8-bit board. A board with two connectors is a 16-bit board. The illustrations below show the types of boards and give examples of BUSINESS-PRO boards in the category.



Some boards have no connectors at the bottom. These attach to other boards and are called piggybacked boards.



CAUTION

Static electricity can damage boards, especially if you are in a carpeted area. While handling a board, keep one hand on the metal frame of the system unit.

Determining Your Board Type

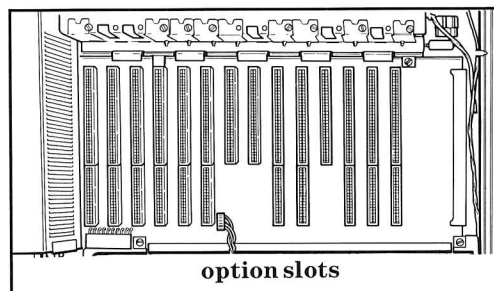
The information printed on the carton may indicate the length and type of the board. If you cannot determine the length and type by reading what is printed on the carton, you should first check for the information in the specifications at the back of the board manual.

If necessary, open the carton containing the board and remove only as much packing material as necessary to see what the board looks like. Leave the board in its antistatic bag until you are ready to install it.

Option Slots

The system unit has fourteen option slots. Option slots are numbered on the back of the system unit.

Like boards, some option slots are long and some are short. Option slots with two connectors are 16-bit slots; those with one connector are 8-bit slots.



In a standard BUSINESS-PRO system unit, at least one slot, and probably more than one slot, is occupied at the time of purchase.

Planning the Locations for Your Boards

Now that you have identified the length and type of each board you are installing, you need to know some general guidelines about locations for boards. You then need to plan the final locations of all boards in your system unit.

Guidelines for Placement of Boards

When planning locations for boards, you should follow some general rules.

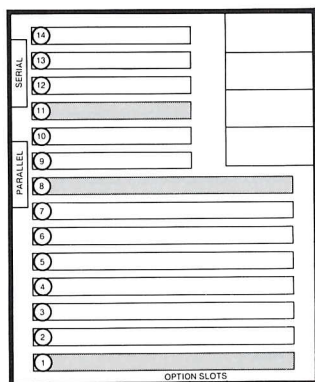
- You can install short boards in either short or long option slots, but you can install long boards only in long option slots.
- With some exceptions, you can install 8-bit boards in either 8-bit or 16-bit slots. (The shapes of some 8-bit boards prevent you from installing them in 16-bit slots.) You can install 16-bit boards only in 16-bit slots.

By making the most efficient use of the available space and option slots in your system unit, you can make future expansion easier. Whenever possible, use the following guidelines to plan a location for each board.

- Avoid installing a short board in a long option slot.
- Avoid installing an 8-bit board in a 16-bit slot.

Placement of the Drive Controllers

The Winchester Controller should be installed in option slot 1, the tape backup controller in option slot 8, and the floppy controller in option slot 11.



floppy controller

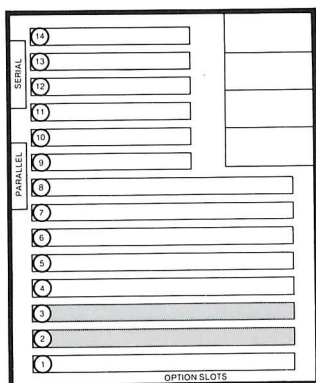
tape backup controller

Winchester Controller

Placement of the CRT Controllers

If you are installing both the TI Mode CRT Controller and the PC-AT Mode CRT Controller, you must install them in adjacent long 16-bit slots so that the cable that links the boards can reach both.

You should install the TI Mode CRT Controller in option slot 2. The PC-AT Mode CRT Controller should be installed in option slot 3.



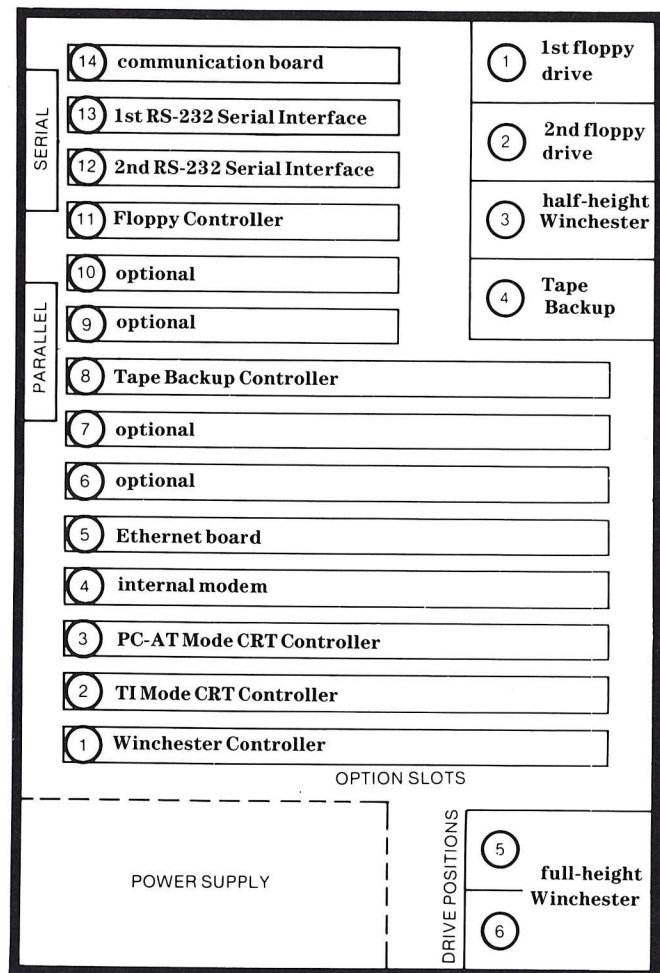
PC-AT Mode CRT Controller
TI Mode CRT Controller

Completing Your Plan

Decide the final positions of all of your boards and drives based on the recommendations presented in the illustration.

Recommended Installation

The illustration below contains the recommended locations for specific boards and drives. For optimum use of space and option slots, use a similar layout when you plan the locations of your boards and drives.



Your Installation Plan

The illustration below is blank so that you can fill in your own plan for installing drives and boards. When your plan has been finalized, record on your configuration card the positions you intend to use for each board and drive.

SERIAL	14		1
	13		2
	12		3
	11		4
	10		
PARALLEL	9		
	8		
	7		
	6		
	5		
	4		
	3		
	2		
	1		
	OPTION SLOTS		
POWER SUPPLY			
DRIVE POSITIONS		5	
		6	

Repositioning Boards and Drives

Your plan may require you to reposition a board or drive that has already been installed.

Repositioning a Board

Chapter 13 of this manual contains instructions on removing a board from the system unit. At this time, refer to the instructions in Chapter 13 to remove any boards that you must reposition.

When you have removed all boards that must be repositioned, proceed to the next page of this chapter.

Repositioning a Drive

Chapter 14 of this manual contains instructions on removing a drive from the system unit. At this time, refer to the instructions in Chapter 14 to remove any drives that you must reposition.

When you have removed all drives to be repositioned, proceed to the next page of this chapter.

Installing BUSINESS-PRO Boards

With the final locations you have planned for your boards recorded on your configuration card, you are ready to install your boards. Use the instructions on these pages to do so.

Order of Installation

The order of installation for BUSINESS-PRO boards is not important with one exception.

If you are installing a TI BUSINESS-PRO 60 Mb Tape Backup and tape backup controller, install them after you have installed all other option boards but before all other drives.

Beginning Installation

You are now ready to install BUSINESS-PRO boards. Use the instructions in the manuals that came with each board. Read all of the manuals thoroughly to ensure that you use any special instructions for a particular board. Instructions for installing both the tape backup and the tape backup controller are in the hardware manual that came with the tape backup.

When you have installed all BUSINESS-PRO boards, proceed to the next page of this chapter.

Installing BUSINESS-PRO Compatible Boards

After you have installed all of your BUSINESS-PRO boards, use the information here to install boards that are compatible with, but not specifically designed for, the BUSINESS-PRO Computer.



CAUTION

Installing a BUSINESS-PRO compatible drive controller or CRT controller in a system unit containing an equivalent controller manufactured by Texas Instruments will damage the system.

Instructions for BUSINESS-PRO Compatible Boards

The manuals that came with BUSINESS-PRO compatible boards may not include specific instructions for installing the boards in the BUSINESS-PRO Computer. Listed below are some issues to consider when using instructions in these manuals.

- External cables—Do not connect any external cables to boards at the time you install the boards.
- Reassembly and testing—Disregard any instructions that tell you to reassemble the system unit or test a board.
- Configuration card—Record on the configuration card the board name and any other important information about each board you install.

Before installing a BUSINESS-PRO compatible drive controller, consult the *TIBUSINESS-PRO Professional Computer Hardware Technical Reference Manual* for information on connecting drives to the controller.

Before installing a CRT controller for a BUSINESS-PRO compatible display unit, a serial or parallel board, or a board containing memory, review the information provided in this chapter for each type of board.

Beginning Installation

Once you have reviewed information specific to your BUSINESS-PRO compatible boards, install them according to the instructions in the board manuals.

When all the boards are installed, proceed either to page 5-22 for information on installing drives or to Chapter 6, Closing the System Unit.

Installing a BUSINESS-PRO Compatible CRT Controller

If you are installing a BUSINESS-PRO compatible CRT controller so that you can use a compatible display unit, you must make sure that switch settings on the system board are correct for your type of display unit. The switch setting controls the use of color or monochrome display units.

Determining the Correct Setting

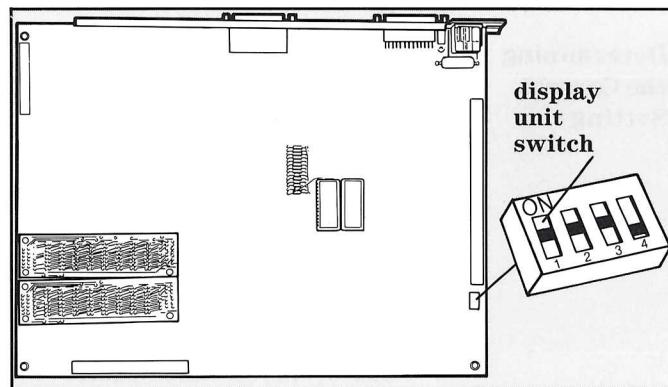
Use this information to determine the correct setting for the display unit switch on the system board.

- If you plan to connect a color display unit to the CRT controller, leave the switch in the **ON** position.
- If you plan to connect a monochrome display unit to the CRT controller, change the setting to **OFF**.

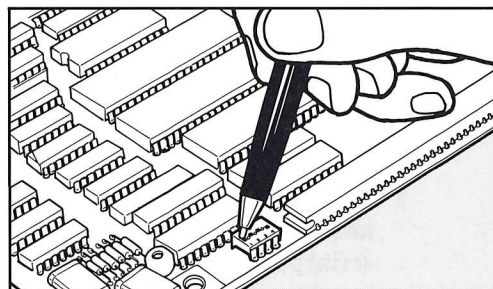
Changing the Switch Setting

To change the setting of the display unit switch, follow these steps.

1. Locate the first switch on the system board.



2. Move the switch to the correct setting.



3. Record the switch setting on the configuration card.

Installing a BUSINESS-PRO Compatible Parallel or Serial Board

If you are installing a BUSINESS-PRO compatible board with either a parallel or serial connector, make sure its device identification does not conflict with the device identification of the built-in connector. The device identification, or port assignment, ensures that the system transmits information to the correct device.

Parallel and Serial Device Identification

You can have two parallel connectors and two serial connectors. One parallel and one serial connector are built into the system unit. The second parallel and serial connectors are on installed boards.

The device identification of the built-in parallel and serial connectors is determined by the parallel and serial switches on the system board. These switches are set at the factory to identify the two connectors as parallel port 1 and serial port 1. Make sure that the parallel and serial connectors on option boards do not have the same device identification as the ones assigned to the built-in connectors.

Determining the Correct Setting

Read the manual provided with the parallel or serial board to determine whether you can change the device identification on the option board. Also, determine the current device identification on the option board.

- If you can change the device identification of the parallel or serial board, use the factory setting for the corresponding switch on the system board.
- If the setting of the option board is port 1, and you cannot change the device identification on the option board, change the setting of the appropriate switch on the system board.

If Using the Factory Settings

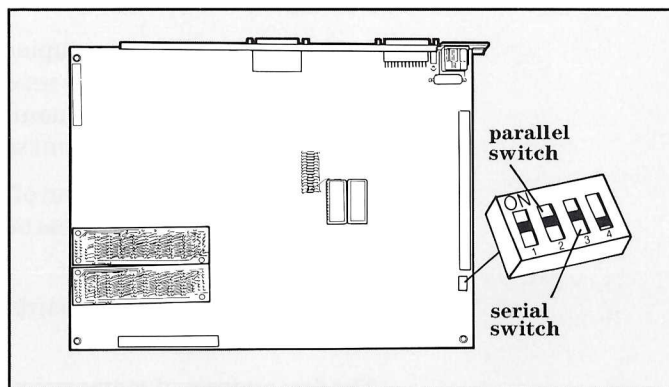
To use the factory settings for the device identification of a built-in parallel or serial connector, follow these steps.

1. Follow the instructions in the manual to change the device identification on the board to port 2.
2. Record on your configuration card the device identification for the board, either parallel port 2 or serial port 2.
3. Write port 1 next to the built-in parallel or serial connector on the configuration card.

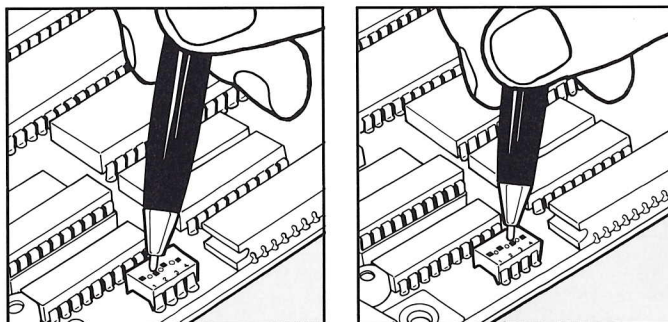
If Changing the Factory Settings

To change the factory setting for the device identification of a built-in parallel or serial connector, follow these steps.

1. Locate either the parallel or serial switch on the system board.



2. Change the switch for either the built-in parallel or serial connector to the **OFF** position.



3. Write port 2 next to the built-in parallel or serial connector on the configuration card and write parallel port 1 or serial port 1 in the board section of the configuration card.
4. Record the new setting of the switch on the system board.

Installing BUSINESS-PRO Compatible Memory

Addresses occupied by memory on an option board must not be the same as addresses occupied by any other memory you have installed. If your system includes TI RAM Modules, a memory board, or a multifunction board with memory, determine the address settings on each board and change the settings if a conflict exists.

Determining if Other Memory Will Conflict

To determine if you must change any switch settings on an option board with memory, follow these steps.

1. Examine your configuration card to determine the addresses occupied by TI RAM Modules you have installed. (See page 4-24 for address settings for TI RAM Modules.)
2. Compare the addresses occupied by TI RAM Modules with the memory addresses set on each option board with memory. Consult the manual for the option board to determine its current setting.
3. Examine the memory section of your configuration card to determine the address occupied by memory on any other option board.
4. Make sure that no option boards with memory share the same memory address.
 - The low address of memory on your first option board must be one higher than the highest address of any TI RAM Modules you have installed.
 - The low addresses of any memory on subsequent option boards must be one higher than the highest address of any memory on a previously installed option board.

**Changing the
Addresses Used
by Other Boards**

If assigning new addresses to memory on an installed option board is necessary, follow these steps.

1. Use the manual supplied with the option board to determine the new settings for switches on the board.
2. Record on the configuration card the addresses that will be used by the memory on each option board.
3. Change the switch settings on each option board. (If you need to remove the board to gain access to the switches, refer to pages 13-6 and 13-7 for instructions on removal of the board and changing settings on switches.)
4. Determine the amount of RAM on each of the option boards with memory and add that number to your previous total. Then, record the new total for RAM on the configuration card.

Installing BUSINESS-PRO Drives

With the final locations you have planned for your drives recorded on your configuration card, you are ready to install your drives. Use the instructions on these pages to do so.

Order of Installation

The order of installation for BUSINESS-PRO drives is not important with one exception.

If you are installing a TI BUSINESS-PRO 60 Mb Tape Backup and the tape backup controller, install them before you install all other drives. Instructions for installing both the tape backup and the tape backup controller are in the hardware manual that came with the tape backup.

Beginning Installation

Install all BUSINESS-PRO drives using the instructions in the manuals that came with the drives. Read all of the manuals thoroughly to ensure that you use any special instructions for a particular drive.

If you are unable to find a procedure for installing your drive in a particular position, you should read the information starting on page 5-23 before you begin. A better approach, however, is to reconsider your plan and use one of the standard positions for the drive.

When you have installed all BUSINESS-PRO drives, proceed to the next page of this chapter.

Installing BUSINESS-PRO Compatible Drives

After you have installed all of your BUSINESS-PRO drives, use the information here to install drives that are compatible with, but not specifically designed for, the BUSINESS-PRO Computer.

Instructions for BUSINESS-PRO Compatible Drives

The manuals that came with BUSINESS-PRO compatible drives may not include specific instructions for installing the drives in the BUSINESS-PRO Computer. Listed below are examples of issues to consider when using instructions in manuals for BUSINESS-PRO compatible drives.

- Reassembly and testing—Disregard any instructions that tell you to reassemble the system unit or test the drive.
- Supplementary information—Refer to the manual that came with your BUSINESS-PRO floppy drive or Winchester drive for information that may supplement instructions in manuals for BUSINESS-PRO compatible drives.
- Configuration card—Record on the configuration card the drive name and capacity, serial number, and other important information about each drive you install. For Winchester drives, also record the drive type.

Before installing a BUSINESS-PRO compatible drive, refer to the *TIBUSINESS-PRO Professional Computer Hardware Technical Reference Manual* to learn the types of Winchester drives you can install. Drive cylinders and heads must be compatible.

Planning Drive Installation

If your installation plan results in more than one drive being installed on the same drive controller, you must make sure that you set terminating resistors and drive-select settings correctly. Review the information on the next four pages to plan these settings for your drives.

Beginning Installation

Now, install all BUSINESS-PRO compatible drives using the instructions in the manuals that came with them.

When all drives are installed, proceed to the next chapter.

Installing BUSINESS-PRO Compatible Drives (Continued)

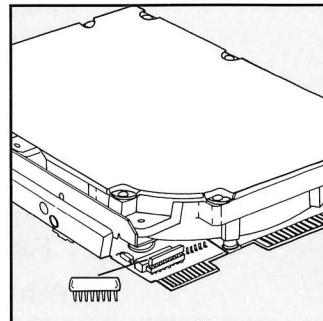
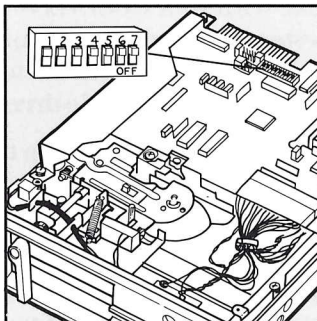
If you are installing more than one drive on a cable, review these principles on terminating resistor settings to determine the correct settings for your plan. Record your settings in the remarks column for drives on the configuration card.

The Function of Terminating Resistors

Terminating resistors ensure the proper operation of a drive. Drives that connect to a floppy drive controller or to a Winchester drive controller come with terminating resistors that can be either installed or removed.

Setting Terminating Resistors

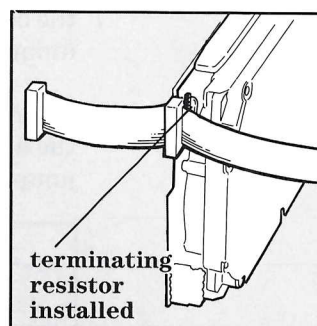
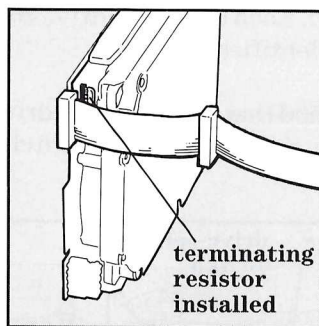
The method that you use to install terminating resistors depends on the drive. Some drives use switches to install or remove a terminating resistor. Other drives require that you install or remove a terminating resistor pack.



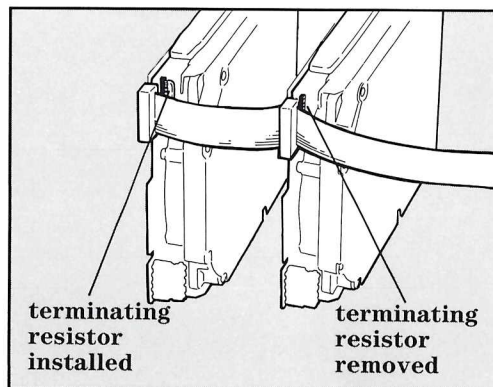
Consult the manual that came with your drive to determine whether the drive uses a terminating resistor switch or pack.

Rules for Setting Terminating Resistors

The rules for setting terminating resistors are based on the number of drives connected by the same cable to a drive controller. If only one drive is connected to a cable, the terminating resistor must be installed on the drive.



If two drives are connected to the same cable, the drive attached to the connector closest to the drive controller must have the terminating resistor removed. The drive attached to the connector most distant from the drive controller must have its terminating resistor installed.



Installing BUSINESS-PRO Compatible Drives (Continued)

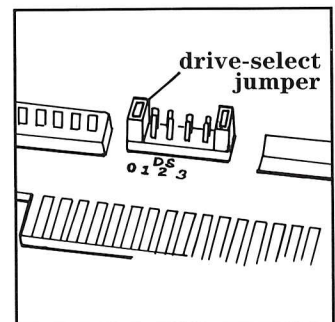
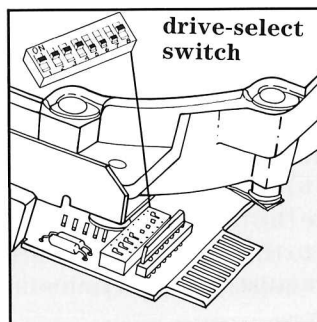
If you are installing more than one drive on a drive controller, review these principles on drive-select settings; then, determine the correct settings for your plan. Record your drive-select setting in the drives section of the configuration card.

The Function of Drive-Select Settings

A drive controller must be able to exchange information between the system and a drive connected to the board. Some drive controllers control more than one drive. If the drive controller controls several drives, it must be able to recognize any drive connected to it and distinguish a drive from others connected to the board. Each drive on a drive controller must have a unique identification.

Setting Drive-Select

The method that you use to set drive-select depends on the drive. Some drives have switches. Others have jumpers.



Rules for Drive-Select Settings

When planning the drive-select settings, keep in mind the following general considerations.

- Each drive connected to the same drive controller must have a unique drive-select setting; otherwise, neither drive will work.
- Floppy drives and Winchester drives that have separate drive controllers have independent drive-select settings. That is, both a floppy drive and a Winchester drive can be selected as first drives.
- On some drive controllers the drive positions, drive-select settings, and controller connectors are interrelated. (For information, refer to page 14-6 in this manual.)

Using a BUSINESS-PRO Controller

Before attaching a drive made for another system, make sure the drive is compatible. Consult your place of purchase or the *TIBUSINESS-PRO Professional Computer Hardware Technical Reference Manual*.

You also must determine which drive-select setting is appropriate for the drive and how the drive-select setting is made on your drive.

If you are connecting a BUSINESS-PRO compatible drive to the BUSINESS-PRO controller, you also need to know where the data and control cables connect to the controller. The cables connect in different locations on the controller depending on the position of the drive in the system unit. The drive-select is determined by which cable connector you use.

For information on where to connect the data and control cables, consult your place of purchase or the *TIBUSINESS-PRO Professional Computer Hardware Technical Reference Manual*. Depending on the drive position you use, you can find additional information in the manual for the equivalent BUSINESS-PRO drive.

Chapter 6: Closing the System Unit

Use only the instructions in this chapter that apply to you.

Table of Contents	Reinstalling the System Unit Cover	6-2
	Reinstalling the System Unit Front Panel	6-4

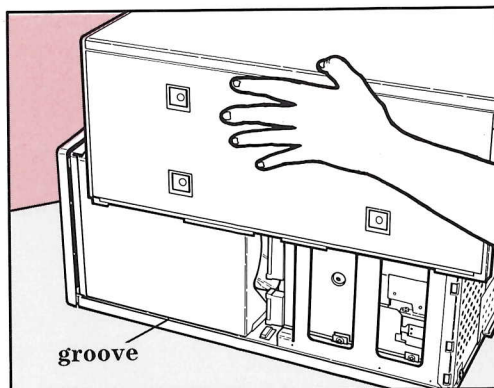
Reinstalling the System Unit Cover

Use this procedure if you need to reinstall the system unit cover.

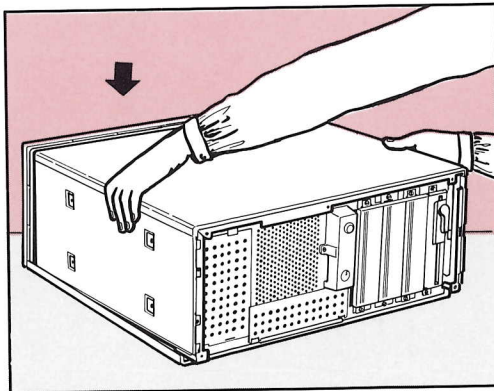
Procedure

To reinstall the system unit cover, follow these steps.

1. Pick up the system unit cover near the top edge and hold it over the system unit above the grooves in the system unit.

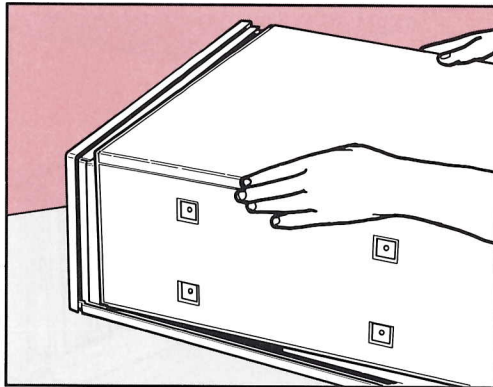


2. Lower the system unit cover into the grooves.

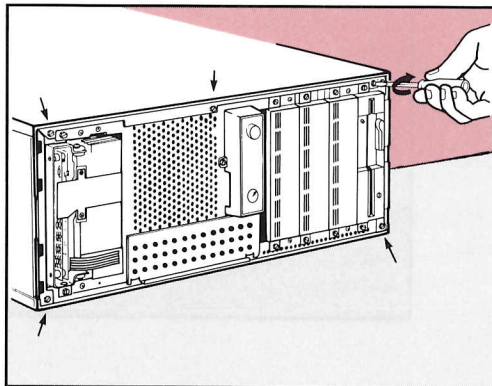


**Procedure
(Continued)**

3. Push the cover toward the back of the system unit until it stops; then, lift it slightly and push again until it snaps into position completely.



4. Check to see that the cover is fully seated in its grooves.
5. Insert and tighten the five screws that secure the cover.



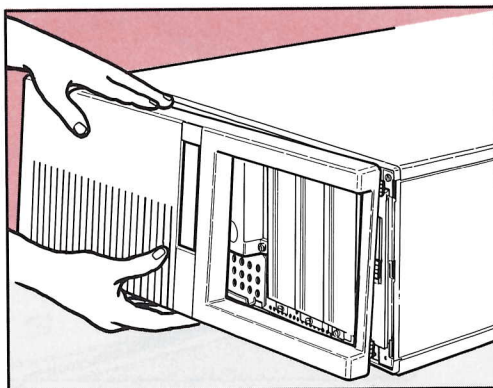
Reinstalling the System Unit Front Panel

Use this procedure to reinstall the front panel on the system unit.

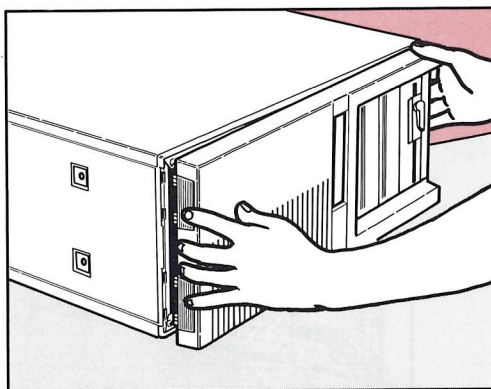
Procedure

To reinstall the front panel, follow these steps.

1. Hook the tabs on the front panel into the openings in the system unit.



2. Hold the attached end in place while you swing the front panel closed and snap it into place.



Chapter 7: Readyng the System Unit for Final Placement

Before you can place the system unit in the work area, you must attach the system unit stand.

Table of Contents	Preparing to Attach the System Unit Stand	7-2
	Attaching the System Unit Stand	7-3

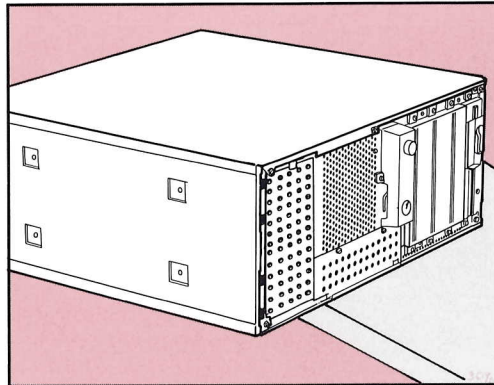
Preparing to Attach the System Unit Stand

Before you can attach the system unit stand, you need to perform some preparatory steps.

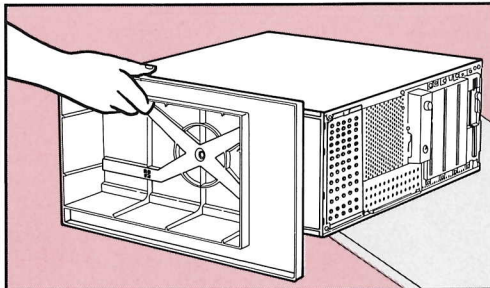
Procedure

Before you attach the system unit stand, follow these steps.

1. Locate the four screws that came with the system unit stand.
2. Position the system unit so the end with the four indentations slightly overhangs the front of your work surface.



3. Align the square pegs on the stand with the square indentations on the bottom of the system unit and make sure the foot on the stand is at the front of the system unit.



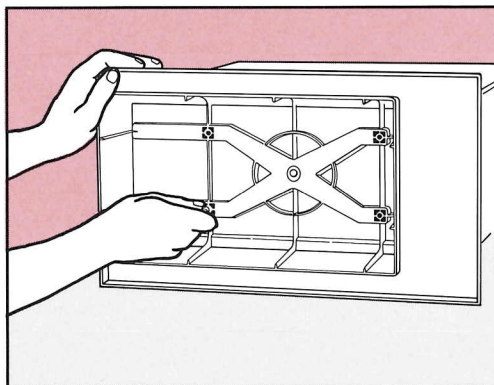
Attaching the System Unit Stand

Use this procedure for attaching the system unit stand.

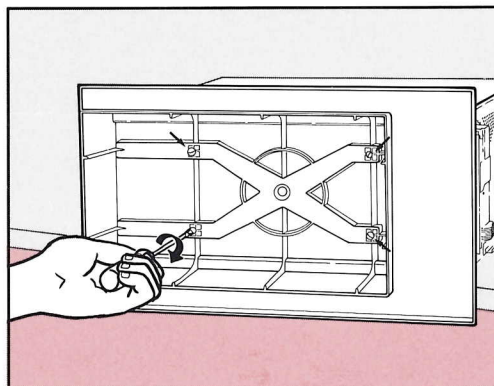
Procedure

To attach the system unit stand, follow these steps.

1. Hold the stand in place while you insert the screws and tighten them with your fingers.



2. Insert the bottom two screws and tighten all four screws with a screwdriver.



3. Lift the system unit carefully and stand it up on the floor near its final working position. Leave enough space behind the system unit so you can reach the connectors on the back of the system unit to install external devices.

Chapter 8: Connecting External Devices

**This chapter contains information on connecting external devices.
Read in sequence only the information that applies to you.**

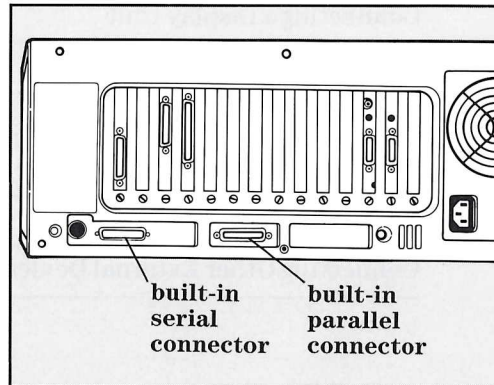
Table of Contents	General Information About External Devices	8-2
	Connecting a Display Unit	8-4
	Connecting a Mouse	8-6
	Connecting the Keyboard	8-8
	Connecting a Parallel Printer	8-12
	Connecting a Serial Printer	8-14
	Connecting Other External Devices	8-17

General Information About External Devices

External devices provide a wide variety of functions. You need to know some general information about where external devices connect, as well as some guidelines to follow while connecting them.

Built-In Connectors on the System Unit

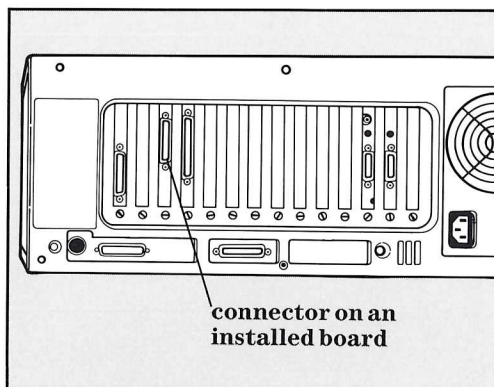
Some connectors are built into the system unit.



You can use the built-in serial connector for a mouse or a serial printer. It is also possible to use the built-in serial connector for an asynchronous communication device, as long as the communication software does not require the TI Mode RS-232 Serial Interface.

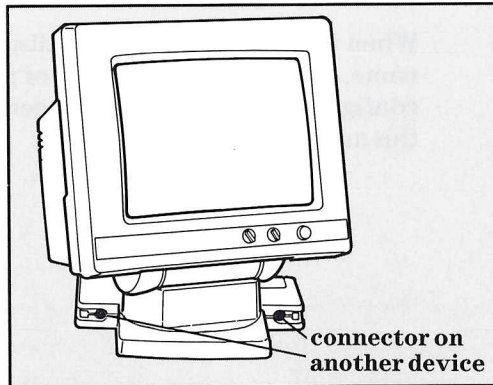
Connectors on Option Boards

Some option boards have connectors that extend through openings on the back of the system unit. For example, a CRT controller has a connector for attaching a display unit. Parallel and serial communication boards have connectors for attaching external devices.



Connectors on Other External Devices

Some connectors are provided on other external devices. For example, BUSINESS-PRO display units have connectors for a TI Optical Mouse and a keyboard.



Guidelines for Connecting External Devices

Regardless of where you connect an external device, use these guidelines.

- Make sure you are connecting a device to the right connector. Many connectors look alike but are not interchangeable.
- For external devices that connect to a board, you may need to refer to your configuration card to determine the slot in which the board is installed.
- Record the name, serial number, and date of purchase of each external device on the configuration card at the time you connect the device.

Connecting a Display Unit

The method you use for connecting a display unit depends on whether it is a BUSINESS-PRO display unit or a display unit that is compatible with the BUSINESS-PRO Computer. Use this information to connect your display unit to the system unit.

If Connecting a BUSINESS-PRO Display Unit

If you are connecting a BUSINESS-PRO Monochrome Display Unit or Color Display Unit, follow the installation instructions in the manual packed with the unit.

When you finish installing the display unit, record the name, serial number, and date of purchase on the configuration card. Then, proceed to your next task in this manual.

**If Connecting
a BUSINESS-PRO
Compatible
Display Unit**

If you are connecting a BUSINESS-PRO compatible display unit, use the manual that came with the display unit. Also, consider the following.

- The power cable for the display unit may be a type that can connect to the power connector on the back of the system unit.
- Regardless of where the power cable connects, make sure the voltage and frequency of the display unit match the voltage and frequency of the power outlet.
- During installation, you must attach a cable to the connector on the CRT controller designed for your display unit. If you do not know which option slot contains the CRT controller, refer to the configuration card.
- If you are installing a monochrome display unit and accompanying CRT controller, you must change the display unit switch on the system board. Refer to page 5-17 for information on the display unit switch.

When you finish installing the display unit, record the name, serial number, and date of purchase on the configuration card. Then, proceed to your next task in this manual.

Connecting a Mouse

The method you use for connecting a mouse depends on whether it is a TI Optical Mouse or a BUSINESS-PRO compatible optical mouse. Information here and on the following page tells you how to connect a mouse to your computer.

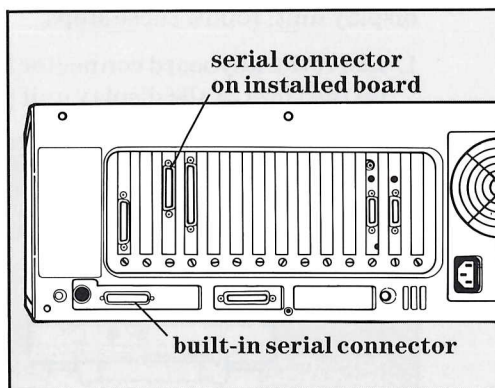
If Connecting a TI Optical Mouse

The TI Optical Mouse connects to the pedestal of a BUSINESS-PRO display unit. If you are connecting a TI Optical Mouse, follow the installation instructions in the manual that came with the mouse.

When you finish installing the mouse, record the name, serial number, and date of purchase. Then, proceed to your next task in this manual.

**If Connecting
a BUSINESS-PRO
Compatible
Mouse**

A BUSINESS-PRO compatible optical mouse can be connected to either the serial connector built into the system unit or to a serial connector on an installed board that is capable of asynchronous communications.



The device identification, or port assignment, for your BUSINESS-PRO compatible mouse can be either serial port 1 or serial port 2. To determine the device identification for your mouse, use the examples below.

- If you have connected the mouse to the built-in serial connector and have not changed the setting of the serial switch on the system board, record the device identification as serial port 1.
- If you have connected the mouse to a serial connector on a BUSINESS-PRO compatible board and have not changed the setting of the serial switch on the system board, record the device identification as serial port 2.

Use the manual that came with the mouse for installation instructions.

When you finish installing the mouse, record the name, serial number, date of purchase, and device identification on your configuration card. Then, proceed to your next task in this manual.

Connecting the Keyboard

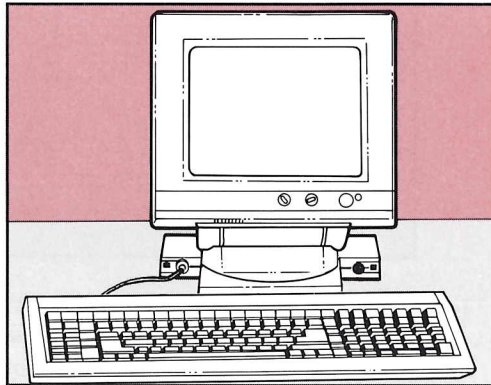
The method you use for connecting your BUSINESS-PRO keyboard depends on whether you have a BUSINESS-PRO display unit or a display unit that is compatible with the BUSINESS-PRO Computer. If you have a BUSINESS-PRO display unit, use the instructions below. If you have a compatible display unit, use the instructions on page 8-10.

If You Have a BUSINESS-PRO Display Unit

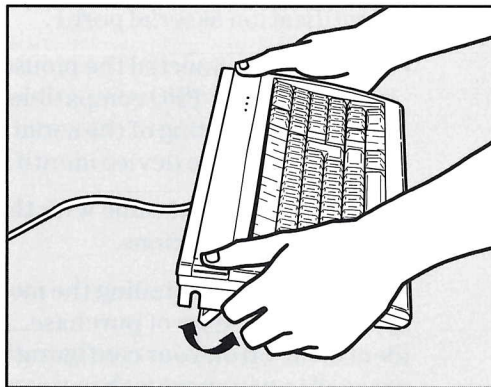
Connectors for the keyboard are provided on the BUSINESS-PRO Monochrome Display Unit and on the BUSINESS-PRO Color Display Unit.

To connect the keyboard to either BUSINESS-PRO display unit, follow these steps.

1. Insert the keyboard connector into either connector on the front of the display unit pedestal.

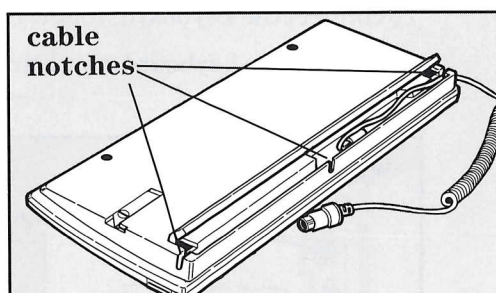


2. Adjust the angle of the keyboard by pressing the adjustment tabs on both sides while raising the back of the keyboard.



**If you Have a
BUSINESS-PRO
Display Unit
(Continued)**

3. Direct the cable through the right, left, or middle cable notch on the base of the keyboard.



Connecting the Keyboard (Continued)

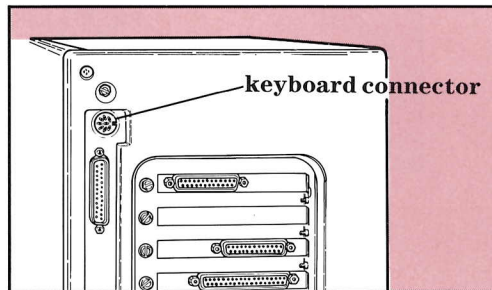
The procedure for connecting the BUSINESS-PRO keyboard is different if you are not using a BUSINESS-PRO display unit.

If You Have a BUSINESS-PRO Compatible Display Unit

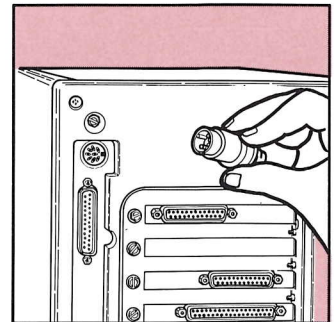
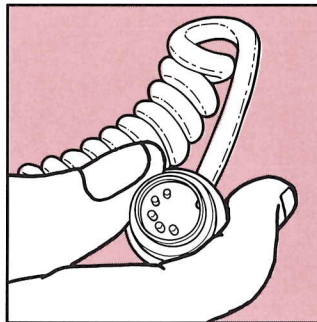
A connector is provided on the back of the system unit for attaching the keyboard.

To connect the keyboard, follow these steps.

1. Identify the keyboard connector on the back of the system unit.

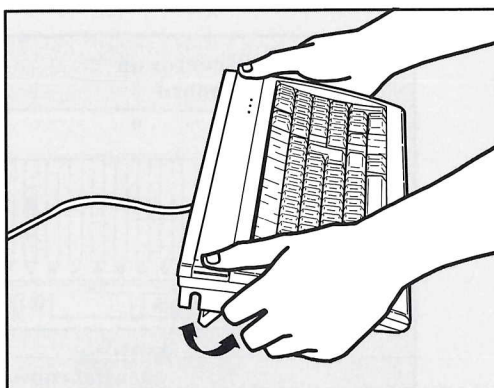


2. Insert the connector at the end of the keyboard cable into the connector on the system unit. (Both connectors are notched to ensure correct alignment.)

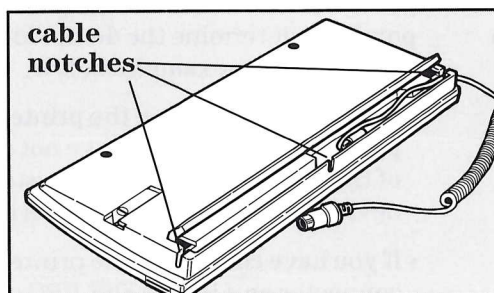


**If You Have
a BUSINESS-PRO
Compatible
Display Unit
(Continued)**

3. Adjust the angle of the keyboard by pressing the adjustment tabs on both sides while raising the back of the keyboard.



4. Direct the cable through the right, left, or center cable notches on the base of the keyboard.

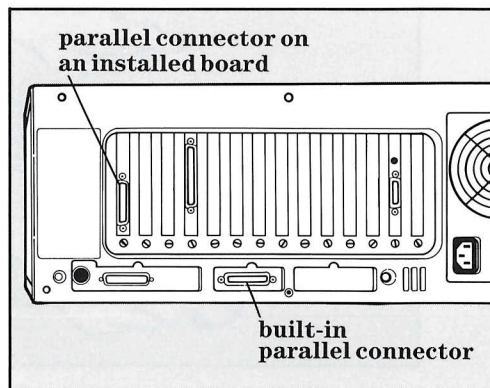


Connecting a Parallel Printer

Generally, printers use one of two types of connections—parallel or serial. Use this information to connect a parallel printer to your system.

Connections for a Parallel Printer

A parallel printer can be connected to either the parallel connector that is built into the back of the system unit or to a parallel connector on an installed board.



Determining the Device Identification

The device identification, or port assignment, for your parallel printer can be either parallel port 1 or parallel port 2. To determine the device identification for your printer, use the examples below.

- If you have connected the printer to the built-in parallel connector and have not changed the setting of the parallel switch on the system board, record the device identification as parallel port 1.
- If you have connected the printer to a parallel connector on a BUSINESS-PRO compatible board and have not changed the setting of the parallel switch on the system board, record the device identification as parallel port 2.



Connecting the Printer

Use the manual that came with the printer and consider the following.

- If the manual instructs you to plug the printer into a power outlet for testing, you can postpone such testing until you have finished installing all options.
- The printer probably has internal switches which you may need to set. If you do not know how to set these switches, you may want to connect the remaining external devices and set the switches after you become more familiar with the system.

When you finish connecting the printer, record the name, serial number, date of purchase and device identification on the configuration card. Then, proceed to your next task in this manual.

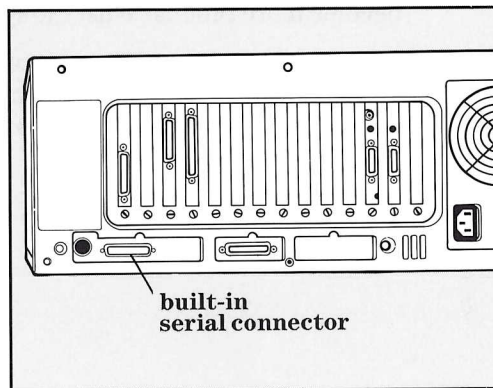
Connecting a Serial Printer

Use the information on the following three pages to connect a serial printer to your system.

Connections for a Serial Printer

A serial printer can be connected to either the serial connector that is built into the back of system unit or to a serial connector on an installed board that is capable of asynchronous communications.

Your operating system and application program determine where you connect your serial printer. With most operating systems and application programs, you should connect the serial printer to the built-in serial connector.



Determining the Device Identification

The device identification, or port assignment, for your serial printer can be either serial port 1 or serial port 2. To determine the device identification for your serial printer, use the examples below.

- If you have connected the serial printer to the built-in serial connector and have not changed the setting of the serial switch on the system board, record the device identification as serial port 1.
- If you have connected the serial printer to a serial connector on a BUSINESS-PRO compatible board and have not changed the setting of the serial switch on the system board, record the device identification as serial port 2.

**Determining
the Device
Identification
(Continued)**

If your operating system and an application program allow you to connect your serial printer to a TI Mode RS-232 Serial Interface, record the phrase “for TI mode only” next to the device identification on the configuration card. If you use the serial interface for communications, your communication equipment and software must operate in TI mode.

The device identification for the RS-232 serial interface relates to how the configuration switch on the RS-232 serial interface has been set; it has no relationship to the setting of the serial switch on the system board. Therefore, if you have installed two TI Mode RS-232 Serial Interface boards, their switch settings cannot conflict.

- If the RS-232 serial interface is assigned to port 1, record the device identification as serial port 1 for TI mode only.
- If you have assigned the RS-232 serial interface to port 2, record the device identification as serial port 2 for TI mode only.

Connecting a Serial Printer (Continued)

After you have decided where to connect the serial printer and have determined the correct device identification, you are ready to connect the printer.

Connecting the Printer

Use the manual that came with the printer and consider the following.

- If the manual instructs you to plug the printer into a power outlet for testing, you can postpone such testing until you have finished installing all options.
- The printer probably has internal switches that you may need to set. If you do not know how to set these switches, you may want to connect the remaining external devices and set the switches after you become more familiar with the system.

When you finish connecting the printer, record the name, serial number, date of purchase and device identification on the configuration card. Be sure to add the phrase “for TI mode only” after the device identification if you have connected your printer to the RS-232 Serial Interface. Then, proceed to your next task in this manual.

Connecting Other External Devices

Use the information on the next three pages to connect any remaining external serial devices.

Connections for External Devices

In addition to external devices, such as a printer or mouse, you can have other external devices, such as an external modem or external floppy drive.

External devices can be connected to the built-in parallel connector, built-in serial connector, or to a connector on an installed board. Some external devices connect to a board designed specifically for that device.

Use the manual that came with your external device to determine where the device needs to be connected. If you are not sure where to connect a device, contact the place of purchase.

Installing the External Device

After you have determined where you should connect the external device, follow the installation instructions that came with the device. Then record on the configuration card any information you may need later and proceed to your next task in this manual.

If you are installing any of the following external devices, refer to the next page for additional information.

- External floppy drives
- External devices that connect to a parallel connector
- External devices that connect to a serial connector

Connecting Other External Devices (Continued)

If you are connecting external floppy drives or external devices that connect either to a parallel or serial connector, use the information below.

If Installing an External Floppy Drive

External floppy drives connect by a cable to a connector on the floppy controller. The standard location for the floppy controller is option slot 11.

If Using a Parallel Connector

If you are connecting an external device to a parallel connector, the device identification, or port assignment, for your external device can be either parallel port 1 or parallel port 2. To determine the device identification for your external device, use the examples below.

- If you have connected the external device to the built-in parallel connector and have not changed the setting of the parallel switch on the system board, record the device identification as parallel port 1.
- If you have connected the external device to a parallel connector on a BUSINESS-PRO compatible board and have not changed the setting of the parallel switch on the system board, record the device identification as parallel port 2.

**If Using a
Serial
Connector**

If you are connecting an external device to a serial connector, the device identification (port assignment) for your external device can be either serial port 1 or serial port 2. To determine the device identification for your external device, use the examples below.

- If you have connected the external device to the built-in serial connector and have not changed the setting of the serial switch on the system board, record the identification as serial port 1.
- If you have connected the external device to a serial connector on a BUSINESS-PRO compatible board and have not changed the setting of the serial switch on the system board, record the device identification as serial port 2.

You can connect an external serial device to the TI Mode RS-232 Serial Interface board only if your operating system and application programs support the board and operate in TI mode.

The device identification for the RS-232 serial interface relates to how the configuration switch on the RS-232 serial interface has been set; it has no relationship to the setting of the serial switch on the system board. Therefore, if you have installed two TI Mode RS-232 Serial Interface boards, their switch settings cannot conflict.

- If the serial interface is assigned to port 1, record the device identification as serial port 1 for TI mode only.
- If you have assigned the serial interface to port 2, record the device identification as serial port 2 for TI mode only.

Chapter 9: Completing the Initial Setup

Now that you have installed all internal options and connected all external devices, use this chapter for instructions on completing the initial setup and then testing the system. (If you were adding an option to a working system, go to Chapter 10.)

Table of Contents	Connecting Remaining Data Cables	9-2
	Connecting the Power Cables	9-3
	Testing the System After Initial Setup	9-4
	After Using the Diagnostics Diskette	9-5

Connecting Remaining Data Cables

Use this information to connect any remaining data cables you may have.

Connecting the Cables

Now that you have connected all external devices, you need to connect any data cables that remain. These may include cables such as the following.

- A telephone line for an internal modem
- A cable that links the BUSINESS-PRO Computer to another computer

Record on the configuration card the name or type of the data cable you are connecting beside the name of the board you are connecting it to.

Refer to the appropriate manuals now and connect all remaining data cables.

When you have connected all remaining data cables, proceed to the next page of this chapter.

Connecting the Power Cables

Now that you have connected all data cables, you need to connect all power cables and then move the components of your system into their final positions. If you are using your system in a country other than the one in which you purchased it, contact the place of purchase about power requirements before connecting any power cables.



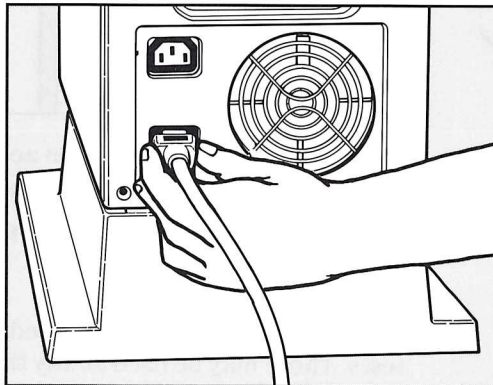
CAUTION

Connecting a power cable while a power switch is on can damage system components. Make sure the system unit and all external devices are turned off before you connect any power cables.

Procedure

To connect the power cables for the system components, follow these steps.

1. Ensure that the power switches for all devices you are connecting are in the **OFF** position. (The only exception is the power switch on the display unit, which should be in the **ON** position.)
2. Connect the power cable for the system unit to the power connector on the back of the system unit.



3. Plug the other end of the power cable into a three-pronged, grounded power outlet.
4. Connect the power cables of any external devices that are not yet connected.
5. Place all system components in their final positions.

Testing the System After Initial Setup

The Diagnostics diskette that came with the BUSINESS-PRO Computer contains programs to test the components of your system, as well as a Start-Up program that lets you tell your system which components are installed. You need to use this diskette, along with any tests included for specific options, to complete the initial setup of your system.

Using the Diagnostics Diskette

To find information on using the programs contained on the Diagnostics diskette, follow these steps.

1. Locate the Diagnostics diskette and the *Diagnostics User's Guide*. If you have more than one Diagnostics diskette, compare the version numbers on their labels and use the one with the latest (highest numbered) version.



2. Run the diagnostic program according to the instructions in the *Diagnostics User's Guide*.
3. Return to this page when you have finished using the Diagnostics diskette.

If You Have Other Tests to Perform

Some of the options you installed may have their own tests. These may be used at any time and include such tests as the following.

- Self-test features built into an option, such as a printer
- Diagnostic programs included with an option

Be sure to test an option before you use it for the first time.

After Using the Diagnostics Diskette

Now that you have completed the initial setup of your system, you need to store the configuration card and read the *Operating Instructions* manual to learn the most efficient use of your BUSINESS-PRO Computer.

Where to Go From Here

At this point you should:

1. Store any manuals supplied with options in the back of this manual. Store them behind the tabbed divider labeled "Option Manuals."
2. Store your updated configuration card at the back of this manual. Use the configuration card whenever you add or remove an option.
3. Assemble the *Operating Instructions* manual in its binder. Place each section behind the appropriate tabbed divider.
4. Store the *Diagnostics User's Guide* in the *Operating Instructions* manual. Place it at the end of the tabbed section labeled "Problem Solving."
5. Store the Diagnostics diskette in the plastic pouch at the back of the *Operating Instructions* manual.
6. Read the *Operating Instructions* manual which includes information on the following topics.
 - Operation of the system unit, drives, and keyboard
 - Making hardware and software work together
 - Problem solving
 - Additional information, such as moving the system, storing the system, using control codes, alternate character sets, and international keyboards

Chapter 10: Completing the Addition of an Option

**Use this chapter only if you have added an option to a working system.
(If you were setting up the sytem for the first time, go to Chapter 9.)**

Table of Contents	Reconnecting Cables	10-2
	Testing the System After Adding an Option	10-3

Reconnecting Cables

In preparation for testing your system, you can now reconnect cables that you disconnected earlier, such as cables for the keyboard, display unit, and system unit.



CAUTION

Connecting cables while a power switch is on can damage system components. Make sure the system unit and all external devices are turned off before you connect any cables.

Procedure

To reconnect cables, follow these steps.

1. Ensure that the power switches for all the devices you are connecting are in the **OFF** position. (The only exception is the power switch on the display unit, which should be in the **ON** position.)
2. Reconnect any data cables you disconnected from the system unit, referring to the notes you made about the location of each cable.
3. Tighten any screws on connectors that have screws.
4. Connect all power cables, including the power cable for an external device you may have added.

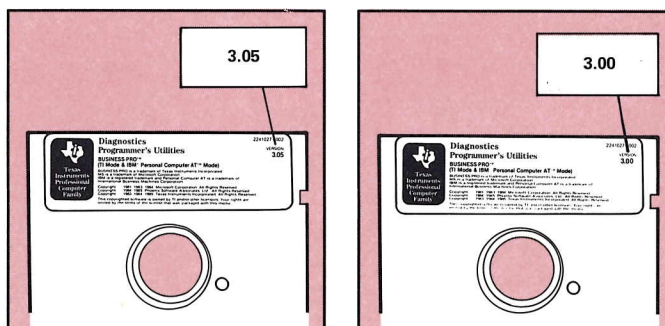
Testing the System After Adding an Option

After adding an option, you need to test the system using the **Diagnostics** diskette that came with the **BUSINESS-PRO** Computer. You should also use any tests that are specifically designed for the new option and, if necessary, run the **Start-Up** program on the **Diagnostics** diskette.

Using the Diagnostics Diskette

To test your assembled system with the added option, follow these steps.

1. Locate the **Diagnostics** diskette and its *Diagnostics User's Guide*. If you have more than one **Diagnostics** diskette, compare the version numbers on their labels and use the one with the latest (highest numbered) version.



2. Run the diagnostic program according to the instructions in the *Diagnostics User's Guide*.
3. Return to this page when you have finished using the **Diagnostics** diskette.

If You Have Other Tests to Perform

Perform any additional tests that are available for the new option. These may include the following.

- Self-test features built into an option, such as a printer
- Diagnostic programs included with an option

Running the Start-Up Program

After you have tested the system, you may need to run the **Start-Up** program on the **Diagnostics** diskette. Run this program if you have added any of the following.

- System board option
- Memory
- Drive

After Using the Diagnostics Diskette

You are now ready to learn how to use the option you have just installed. You can then store the new option manual.

Using the New Option

Refer to information in the option manual, the *Operating Instructions* manual, and your software manuals to use the new option.

Storing the Option Manual

Store the manual that came with the option you have added in the back of this manual behind the tabbed divider labeled "Option Manuals."

Chapter 11: Removing a System Board Option

Use the instructions in this chapter if you are removing an option installed on the system board, such as a numeric coprocessor. Before removing an option for service, check with your dealer for specific instructions to see if options can be removed from the system unit and returned separately.

Table of Contents	Preliminary Steps	11-2
	Gaining Access to a System Board Option	11-4
	Removing the System Board Option	11-5
	Reassembling and Testing the System	11-6

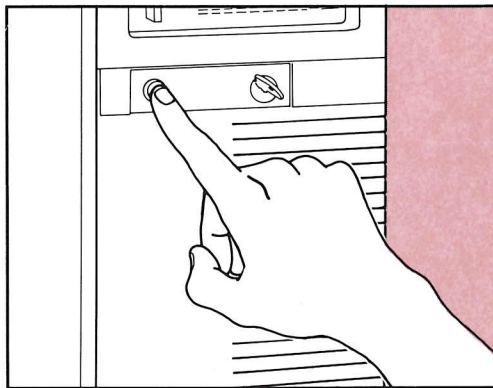
Preliminary Steps

You need to make some preparations for the safe and easy removal of a system board option.

Preparing to Remove the Option

To prepare for the removal of a system board option, follow these steps.

1. Turn off all external devices.
2. Turn off the system unit.

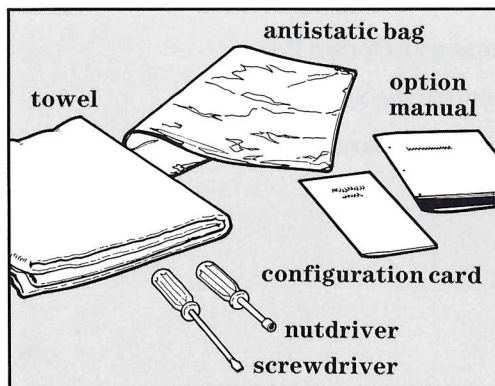


3. Unplug the power cables for the system unit and external devices.

**Preparing to
Remove the
Option
(Continued)**

4. Gather the following materials.

- A 1/4-inch nutdriver or a medium-sized, flat-bladed screwdriver
- A towel and newspaper to protect the work surface from being scratched by the system unit
- An antistatic bag or piece of aluminum foil on which to place the option when you remove it
- The configuration card stored at the back of this manual
- The manual for the system board option you are removing



5. Refer to the option manual and to the configuration card to determine where the system board option is installed on the system board.

Gaining Access to a System Board Option

Use the chart to identify the instructions you need to follow to gain access to a system board option. All instructions are in preceding chapters of this manual.

What to Read	Page
Positioning the System Unit	2-8
Removing the System Unit Stand (optional)	2-9
Removing the System Unit Front Panel	3-3
Removing the System unit Cover	3-4
General Information About System Board Options	4-2
General Information About System Board Switches	4-3
Determining If You Must Remove Other Options	4-4
If You Must Remove the High Capacity RAM Expansion Board	4-5
If You Must Remove an Option Board	4-6
Preparing to Remove the System Board	4-7
Removing the System Board	4-12

11-4 Removing a System Board Option

Removing the System Board Option

You need to exercise special care when removing a system board option. What you do after removing the option depends on whether you are installing a replacement.

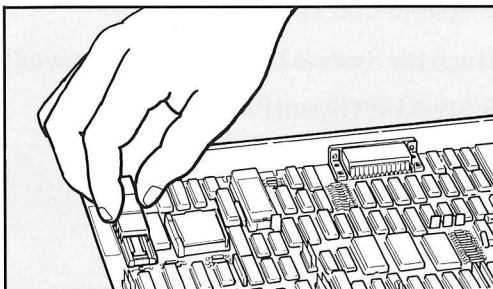


CAUTION

Static electricity can damage the system board or a system board option, especially if you are in a carpeted area. While handling the system board and system board option, keep one hand in contact with the metal frame of the system unit.

Removing the Option

Remove a system board option by alternately pulling up on each end of the option to loosen it from the pins on the system board.



If you are returning the option to the place of purchase, place the system board option in an antistatic bag or wrap it in aluminum foil and pack it in its original carton.

If You Are Installing a Replacement

Install the new option according to the instructions in the manual that came with the option.

When you have installed the new system board option, proceed to the next page of this chapter.

If You Are Not Installing a Replacement

Permanent removal of a system board option may affect the operation of your system. If you remove the 128 Kb RAM system board option, you need to reset the RAM switch on the system board to the **OFF** position.

For information on the consequences of removing the system board option, refer to the manual that came with the option.

Reassembling and Testing the System

You need to reassemble and test your system regardless of whether or not you replaced the system board option you removed. Use the chart to identify the instructions you need. All of the instructions are in this manual.

What To Read	Page
Reinstalling the System Board	4-15
Completing the Reinstallation of the System Board	4-16
Reinstalling Option Boards	4-20
Reinstalling the High Capacity RAM Expansion Board	4-21
Reinstalling the System Unit Cover	6-2
Reinstalling the System Unit Front Panel	6-4
Preparing to Attach the System Unit Stand (if removed)	7-2
Attaching the System Unit Stand (if removed)	7-3
Reconnecting Cables	10-2
Testing the System After Adding an Option	10-3

Chapter 12: Removing TI Memory Modules

Use the instructions in this chapter if you are removing a TI RAM Module from the High Capacity RAM Expansion board. This chapter also contains instructions on what to do if this affects your system. Before removing an option for service, check with your dealer for specific instructions to see if options can be returned separately.

Table of Contents	Preliminary Steps	12-2
	Gaining Access to a TI RAM Module	12-4
	Removing the TI RAM Module	12-6
	Ensuring Memory Is Contiguous	12-8
	Reassembling and Testing the System	12-10

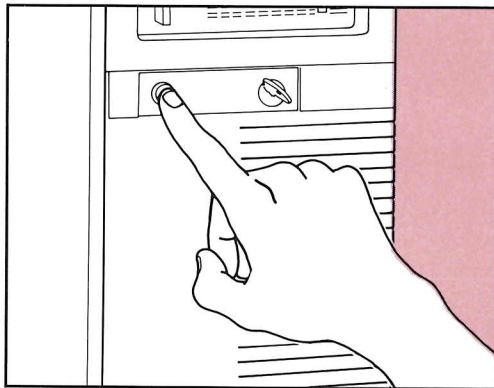
Preliminary Steps

You need to make some preparations for the safe and easy removal of a TIRAM Module. If you are removing a module because it is defective, you need testing information from the Diagnostics diskette to identify the defective module.

Preparing to Remove the RAM Module

To prepare to remove a RAM module, follow these steps.

1. Turn off all external devices.
2. Turn off the system unit.

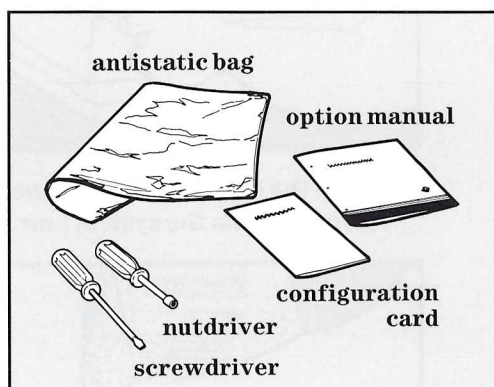


3. Ensure that the security lock is in the unlocked position.
4. Unplug the power cables for the system unit and external devices.

**Preparing to
Remove the
RAM Module
(Continued)**

5. Gather the following materials.

- A 1/4-inch nutdriver or a medium-sized, flat-bladed screwdriver
- An antistatic bag or piece of aluminum foil on which to place the module after you remove it
- The configuration card stored at the back of this manual
- The manual for the High Capacity RAM Expansion board



6. Use the diagnostic information along with the information on the configuration card to determine which module is defective.

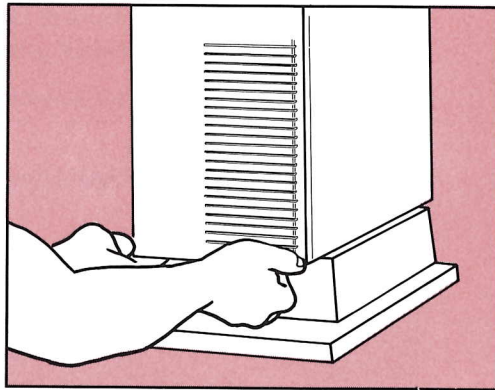
Gaining Access to a TIRAM Module

To gain access to a TIRAM Module, you must first remove the system unit front panel.

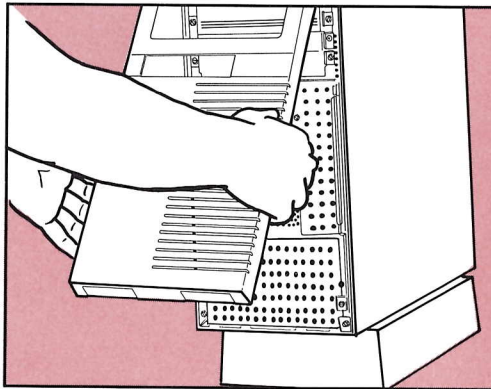
Removing the Front Panel

To remove the front panel, follow these steps.

1. Press in firmly on the notched areas at the bottom end of the front panel.



2. Swing the end of the front panel out and away to remove it from the system unit.



3. Set the front panel aside.



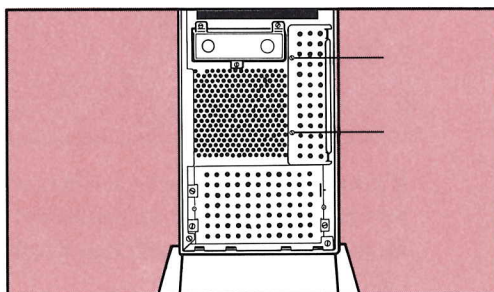
CAUTION

Static electricity can damage RAM modules and the RAM expansion board, especially if you are in a carpeted area. When handling the RAM modules and the RAM expansion board, keep one hand in contact with the metal frame of the system unit.

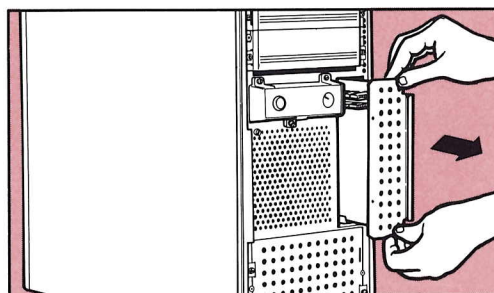
Removing the Board

To remove the RAM expansion board, follow these steps.

1. Remove the two screws in the face plate.



2. Hold the face plate of the board and slide the board partially out of the system unit.



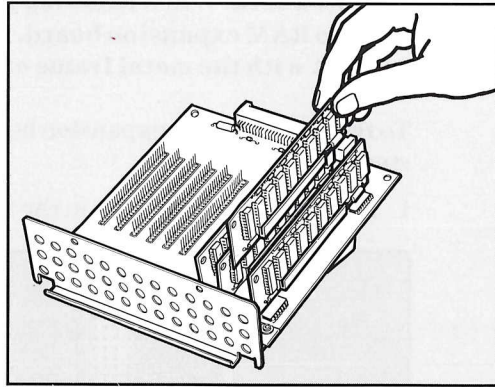
3. Check to make sure the battery cable has not become entangled with a RAM module.
4. Slide the board completely out of the system unit, and set it aside on an antistatic bag or piece of aluminum foil.

Removing the TI RAM Module

You should exercise special care when you remove a TI RAM Module. What you do after removing the module depends on whether you are installing a replacement or not.

Removing the RAM Module

Remove the RAM module by pulling it straight up from its connector.



If you are returning the RAM module to the place of purchase, place it in an antistatic bag or wrap it in aluminum foil and pack the RAM module in its original carton.

**If You Are
Installing
a Replacement**

Install the RAM module according to the instructions that came with the module. Ignore any instructions about placement of the module; install the new RAM module in the connector vacated by the RAM module you removed.

When you have installed the replacement RAM module, proceed to page 12-10 of this chapter for instructions on how to reassemble and test your system.

**If You Are Not
Installing
a Replacement**

Permanent removal of a RAM module may affect the operation of your system.

Removing memory can affect software that makes use of that memory. If you have software that requires large amounts of memory, refer to the manuals for that software for information on how memory removal affects the software.

Memory must be contiguous; that is, it must occupy an unbroken sequence of memory addresses. Removing a RAM module can result in a break in the sequence. Use the instructions on the next page to determine if you need to make adjustments to accommodate the removal of a RAM module. Instructions on making the adjustments are also included.

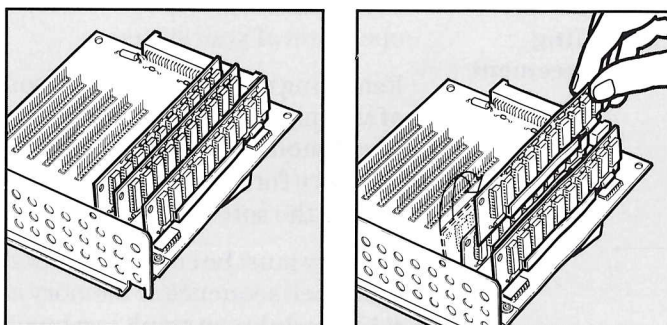
Ensuring Memory Is Contiguous

If you are not replacing the RAM module you removed, you may need to reposition another module on the RAM expansion board or to change settings on an option board that contains memory.

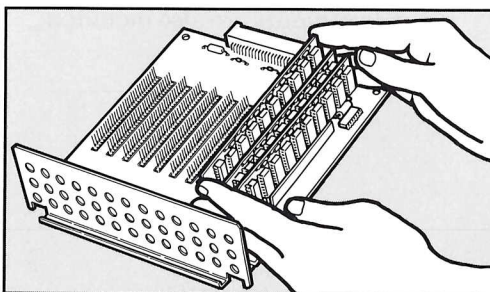
Ensuring That TI Memory Is Contiguous

The TI High Capacity RAM Expansion board contains twelve connectors for RAM modules. The connectors are labeled J1 through J12. Memory on the RAM expansion board is contiguous if you have no empty connectors between installed RAM modules.

Look at the RAM modules on your RAM expansion board to determine if the remaining memory is contiguous. If it is not contiguous, remove the RAM module from the highest numbered connector and install it in the connector that creates the gap.



After closing the gap, remove the unpaired module and store it in its antistatic bag in the original carton.



Record on the configuration card the new high address for TI RAM Modules and adjust the total for RAM.

**Ensuring That
Other Memory
Is Contiguous**

The information in the memory section of your configuration card may indicate that an installed board contains memory. If you have memory on an option board, removing TIRAM Modules results in a gap between memory addresses occupied by the TIRAM Modules and those occupied by memory on the option board. You need to close the gap in memory by assigning new memory addresses to the memory on the option board.

You assign new addresses to memory on an option board by changing settings on the board. To change these settings, follow these steps.

1. Use the configuration card to determine which option board occupies the highest memory addresses.
2. Record on the configuration card the addresses necessary to fill the gap. Record them next to the entry for the board with the highest memory addresses.
3. Refer to pages 13-6 and 13-7 for instructions on removing the board and changing the settings on the board.

After you have finished reinstalling the option board, proceed to the next page of this chapter.

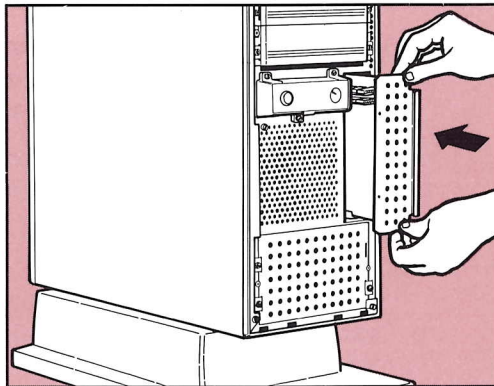
Reassembling and Testing the System

Once you have removed the RAM module and performed any tasks necessary to ensure that memory is contiguous, you need to reassemble and test your system.

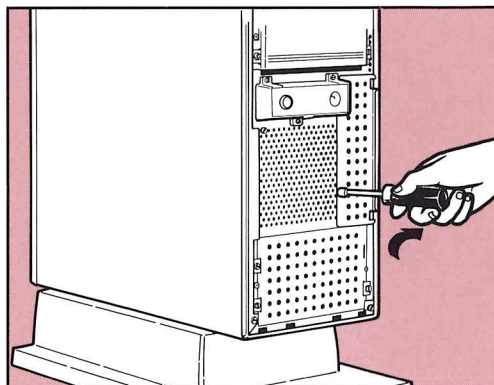
Reinstalling the RAM Expansion Board

To reinstall the RAM expansion board, follow these steps.

1. Align the RAM expansion board with the guiderails at the front of the system unit.
2. Slide the board into place in the system unit. Make sure that the board does not interfere with the cable for the battery.



3. Insert and tighten the two screws that secure the board.

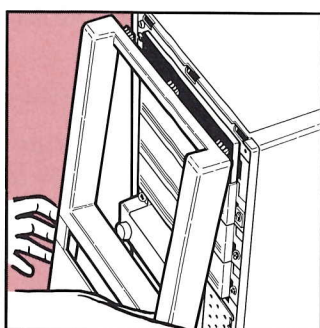


12-10 Removing TI Memory Modules

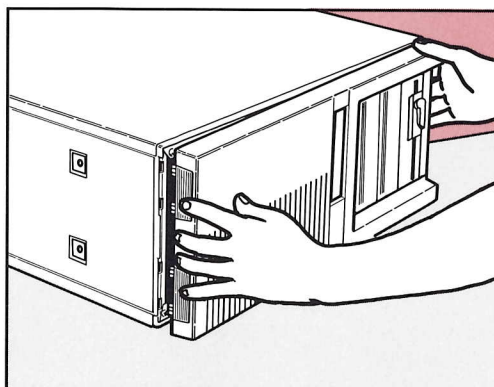
Reinstalling the Front Panel

To reinstall the front panel on the system unit, follow these steps.

1. Hook the tabs at the top of the front panel into the openings on the top of the system unit.



2. Hold the attached end in place while you swing the front panel closed and snap it into place.



Reassembling and Testing the System (Continued)

Before you test the system, you need to complete reinstalling the system.

Completing the Reinstallation Procedure

To complete the reinstallation procedure, follow these steps.

1. Ensure that the power switches for all devices you are connecting are in the **OFF** position.
2. Reconnect all of the power cables to the system unit and external devices.
3. Plug the power cables into the outlets.
4. Use the instructions in Testing Your System After Adding an Option on page 10-3 of this manual.

Chapter 13: Removing a Board

Use the information in this chapter to remove a board from the system unit. This chapter also contains instructions on what to do if removing a board affects your system. Before removing a board for service, check with your dealer for specific instructions to see if your options can be removed from the system unit and returned separately.

Table of Contents	Preliminary Steps	13-2
	Planning Removal of a Board	13-4
	Gaining Access to the Board	13-5
	Removing the Board	13-6
	Reassembling and Testing the System	13-12

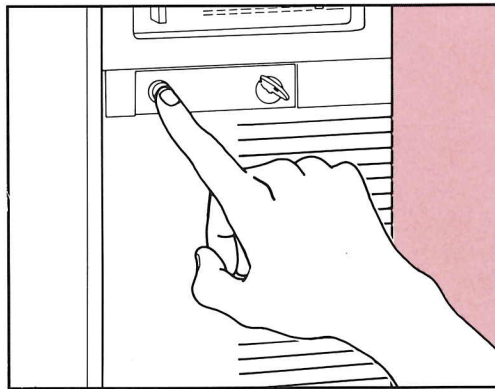
Preliminary Steps

You need to make some preparations for the safe removal of a board.

Preparing To Remove the Board

To prepare for the removal of a board, follow these steps.

1. Turn off all external devices.
2. Turn off the system unit.

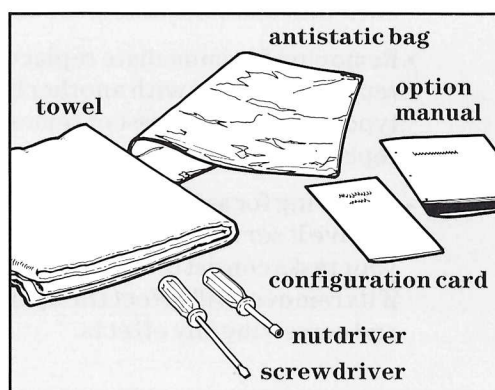


3. Unplug all data cables and power cables for the system unit and external devices.

Preparing to Remove the Board (Continued)

4. Gather the following materials.

- A 1/4-inch nutdriver and a medium-sized, flat-bladed screwdriver
- A towel to protect the work surface from scratches
- An antistatic bag or piece of aluminum foil on which to place the option board after you remove the board
- The configuration card stored at the back of this manual
- The manual for the board you are removing



5. Refer to the configuration card or the option manual to determine the option slot in the system unit where the board is currently installed.

Planning Removal of a Board

Your reason for removing the board determines which removal tasks you need to perform. Use this information to gain an understanding of the various removal tasks involved.

Overview of Removal Tasks

You may have to remove a board for one of four reasons.

- Repositioning — If you are moving the board to a new option slot as a part of the procedure for installing another board or drive, your tasks consist of removing the board and reinstalling it in the new option slot.
- Changing memory settings on a BUSINESS-PRO compatible memory board — If you were directed to this chapter as part of a procedure for adding or removing TI RAM Modules on the High Capacity RAM Expansion board, your tasks consist of removing the BUSINESS-PRO compatible memory board, setting its switches, and reinstalling the board.
- Removing for immediate replacement — If you are replacing a board with another board of the same type, your tasks consist of removing the old board and replacing it with the new one.
- Removing for service — If you are removing the board to have it serviced or because you no longer need it, your tasks consist of removing the board, determining if its removal will affect the operation of your system, and correcting any effects.

Gaining Access to the Board

Use the chart to identify which instructions you need to gain access to the board. All of the instructions are in preceding chapters of this manual. If you are removing the board to change memory settings, you should have already removed the system unit front panel, and you can omit that step.

What To Read	Page
Positioning the System Unit	2-8
Removing the System Unit Stand (optional)	2-9
Removing the System Unit Front Panel	3-3
Removing the System Unit Cover	3-4

Removing the Board

Now that you have access to the board, you can remove it. After you have removed the board, your next task depends on the reason you removed it.



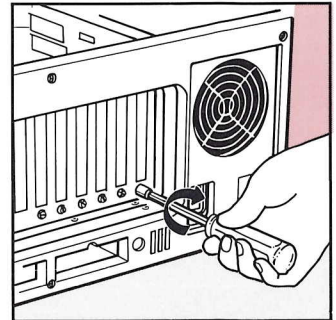
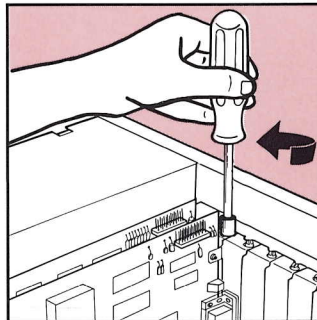
CAUTION

Static electricity can damage option boards, especially if you are in a carpeted area. While handling the board, keep one hand in contact with the metal frame of the system unit.

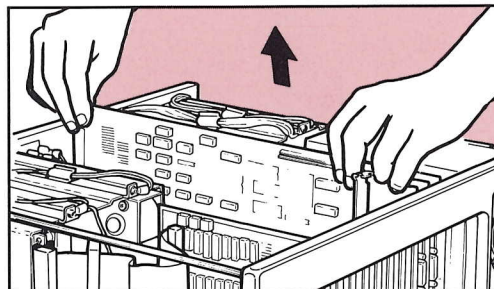
Removing the Board

To remove the board from the system unit, follow these steps.

1. Note the positions of any cables connected to the board and disconnect them. (You may need to remove an adjacent board to disconnect the cables.)
2. Remove the two screws at the back of the board that secure the board to the system unit.



3. Pull the board straight out of the system unit.



**Removing
the Board
(Continued)**

4. Place the board on an antistatic bag or piece of aluminum foil. (If you are returning the board to the place of purchase or storing the board, place it in the antistatic bag or wrap it in aluminum foil and pack the board in the original carton.)

**If You Are
Repositioning
the Board**

If you are repositioning the board as part of an installation procedure, return now to the installation procedure that directed you to this chapter.

**If You Are
Changing
Settings
on the Board**

If you removed the board to change memory settings, follow these steps.

1. Refer to the manual that came with the board for information on how to set the switches.
2. Set the switches on the board according to the memory settings you planned and recorded on your configuration card for that board.
3. Reinstall the board in the option slot from which you removed it.
4. Reconnect any internal cables you disconnected earlier.
5. Secure the board at the back using the two screws you removed.
6. Return to the installation procedure that directed you to this chapter.

Removing the Board (Continued)

Your next task depends on whether you are replacing the option board or not.

If You Are Replacing The Board

If you are replacing the board with another of the same type, follow these steps.

1. Use the installation instructions in the manual that came with the replacement board and consider the following.
 - If instructed to set switches or jumpers on the new board, use the same settings as those on the board you removed.
 - If instructed to reassemble the system unit or perform any test with power connected to the system unit, ignore the instructions.
2. Complete the replacement by using the instructions at the end of this chapter on page 13-12.

**If You Are Not
Replacing
the Board**

Permanent removal of a board may affect the operation of software on your system. You will not be able to use some software until you replace the board. You may be able to modify other software to work without the board. For example, with communication software, you may be able to change a port setting so another board can substitute for a communication board.

Removing certain types of boards requires you to take other actions.

- If you remove a BUSINESS-PRO compatible CRT controller, you may need to set the display unit switch on the system board. For information on changing the display unit switch, refer to page 5-17 of this manual.
- If you have both BUSINESS-PRO CRT controllers and you remove one, you need to remove the cable that links the two boards and store it. For information on how the CRT controllers are connected, refer to the manual for the BUSINESS-PRO PC-AT Mode CRT Controller.
- Some boards contain memory used by the system. These include not only memory boards, but also some multifunction boards. To learn the effects of removing such boards, use the information on the next page.

Removing the Board (Continued)

If the board you removed is one of two or more boards containing memory used by the system, you may have to change switches or jumper settings on another board before completing the removal procedures.

Ensuring That Memory Is Contiguous

To ensure reliable operation, all memory installed in your system must be contiguous; that is, it must occupy an unbroken sequence of memory addresses.

Refer to the memory section of the configuration card to determine if you have an unbroken sequence of memory addresses. If the board you removed occupies the highest memory address, the remaining memory is contiguous. Proceed to the following page.

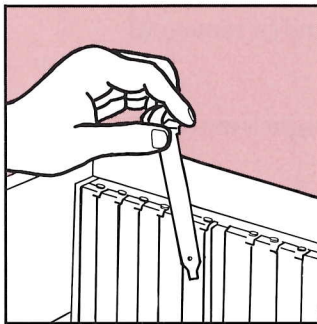
If the board you removed does not occupy the highest memory address, you have a break in memory. To close the gap, follow these steps.

1. Change the low and high address for the remaining board to equal the low and high addresses of the board you removed.
2. Remove the remaining board and reset its memory switches to the addresses you just recorded on the configuration card. (Refer to the manual that came with the board for the method of setting the switches.)
3. Reinstall the board.

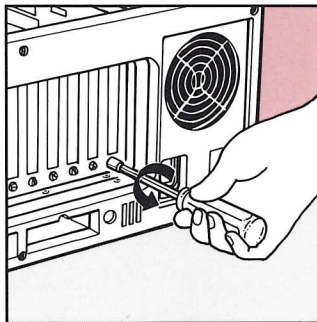
Installing a Blank Plate

To install a blank plate for the board you removed, follow these steps. (If you do not have a blank plate to install, call the place of purchase to obtain one.)

1. Insert the blank plate so it covers the opening in the back of the system unit.



2. Insert and tighten the two screws you removed from the back of the board.



Reassembling and Testing the System

You need to reassemble and test your system regardless of whether you replaced the board you removed. Use the chart to identify the instructions you need. All of the instructions are from preceding chapters of this manual.

What To Read	Page
Reinstalling the System Unit Cover	6-2
Reinstalling the System Unit Front Panel	6-4
Preparing to Attach the System Unit Stand (if removed)	7-2
Attaching the System Unit Stand (if removed)	7-3
Reconnecting Cables	10-2
Testing the System After Adding a New Option	10-3

Chapter 14: Removing a Drive

Use the instructions in this chapter to remove a drive. This chapter also contains instructions on what to do if removal affects your system. Before removing a drive for service, check with your dealer for specific instructions to see if the drive can be removed from the system and returned separately.

Table of Contents	Planning the Removal of a Drive	14-2
	Determining the Effect of Removing a Drive	14-3
	Terminating Resistors	14-4
	Drive-Select Settings	14-6
	Preliminary Steps	14-10
	Gaining Access to a Drive	14-12
	Removing the Drive	14-13
	Reassembling and Testing the System	14-19

Planning the Removal of a Drive

Your reason for removing a drive determines which removal tasks you need to perform.

Overview of Removal Tasks

You may be removing a drive for one of the following reasons.

- **Replacing with same type drive**—If you are replacing a drive with a drive of the same type, your tasks consist of removing the old drive and replacing it with the new one. Begin your removal tasks by reading the information on page 14-10.
- **Replacing with different type drive**—If you are replacing a drive with a drive of a different type, your tasks consist of determining if the change in drive types will affect the operation of your system, removing the old drive, correcting any effects, and installing the replacement drive. Begin your removal tasks by reading the information on the next page.
- **Repositioning**—If you are moving the drive to a new drive position as a part of the procedure for installing another drive, your tasks consist of determining if moving the drive will affect the operation of your system, removing the drive, correcting any effects, and reinstalling the drive in the new drive position. Begin your removal tasks by reading the information on the next page.
- **Changing drive settings**—If you need to change drive settings, your tasks consist of determining which drive settings must be changed, removing the drive, changing its settings, and reinstalling the drive. Begin your removal tasks by reading the information on the next page.
- **Removing for service**—If you are removing the drive to have it serviced or because you no longer need it, your tasks consist of determining if removing the drive will affect the operation of your system, removing the drive, and correcting any effects. Begin your removal tasks by reading the information on the next page.

Determining the Effects of Removing a Drive

If you are removing a drive to send it for service, to replace it with a different type drive, or to reposition it, you need to determine the effects of removing the drive. Removing a drive for any of these reasons may affect two settings on drives remaining in the system—terminating resistors and drive-select.

Terminating Resistors and Removal

Removing or repositioning a drive that shares a data or control cable with another drive may require that you connect a terminating resistor on the drive remaining in the system.

Replacing a drive with a drive of a different type may require that you connect or disconnect terminating resistor from the replacement drive.

Drive-Select Settings and Removal

Removing or repositioning a drive that shares a drive controller with another drive, may require that you change the drive-select settings on the drives remaining in the system unit.

You need to review the information on drive-select settings if any of the following conditions apply.

- The system loads the operating system from the drive that you are removing.
- You have been using software that has been set to use a particular drive.
- You have three or more drives connected to one floppy controller.

Where to Go Next

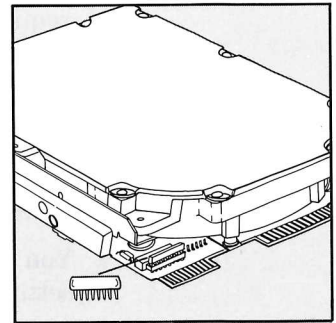
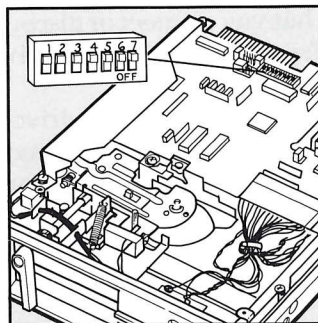
For information on terminating resistors, go to page 14-4. For information on drive-select settings go to page 14-6. If you do not need information on terminating resistors or drive-select settings, skip to page 14-10 and begin the drive-removal procedures.

Terminating Resistors

Read the fundamental information on terminating resistors; then, read the information for your type of drive. If you have BUSINESS-PRO drives that are not installed in positions recommended in Chapter 5 of this manual, follow the instructions for removing BUSINESS-PRO compatible drives.

Fundamental Information

The method you use to connect a terminating resistor depends on the drive. Some drives use switches to connect or disconnect a terminating resistor. Other drives require that you connect or disconnect a terminating resistor pack.



If Removing a BUSINESS-PRO Drive

If you are removing a BUSINESS-PRO drive from a drive position recommended for it in Chapter 5 of this manual, only two situations require that you move a terminating resistor.

Condition

You have floppy drives only in drive positions 1 and 2, and remove the drive in drive position 1.

You have half-height Winchester drives in drive positions 5 and 6, and you remove the one in drive position 6.

Procedure

Connect the terminating resistor on the floppy drive remaining in drive position 2.

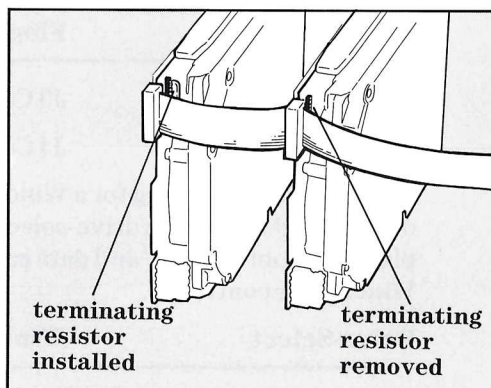
Connect the terminating resistor on the half-height Winchester drive remaining in drive position 5.

If Removing a BUSINESS-PRO Compatible Drive

If you are removing a BUSINESS-PRO compatible drive, or a BUSINESS-PRO drive that is not in a drive position recommended in Chapter 5 of this manual, you need to review the rules for connecting terminating resistors. The rules are based on the number of drives connected by the same data or control cable to a controller.

If only one drive is connected to a data or control cable, the terminating resistor must be connected on the drive. Either connect a terminating resistor pack or set a terminating resistor switch to the **ON** position.

If two drives are connected to the same data or control cable, the drive attached to the receptacle closest to the drive controller must have a terminating resistor disconnected. The drive attached to the receptacle most distant from the drive controller must have a terminating resistor connected.



Changing a Terminating Resistor

Consult the manual that came with your drive to determine whether the drive uses a terminating resistor switch or pack.

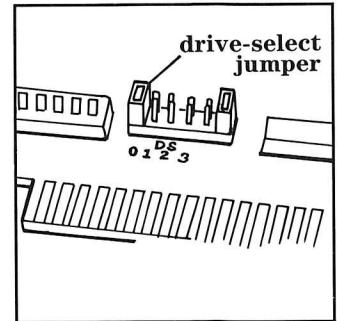
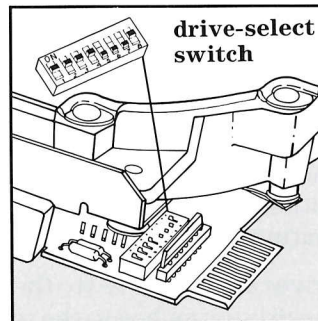
After you have finished connecting or disconnecting the terminating resistor, record the change on your configuration card and proceed to your next task.

Drive-Select Settings

Read the information on drive-select settings and drives. Then, read about the relationship between software and drive-select settings.

Drive-Select Settings And Drives

The method you use to set drive-select settings depends on the drive. Some drives have a drive-select switch. Other drives have a drive-select jumper.



The drive-select setting for a floppy drive is determined both by the setting of a drive-select switch or a drive-select jumper and the place the control cable attaches to the floppy controller.

Drive-Select	Floppy Controller
0 or 1	J3 Connector
2 or 3	J4 Connector

The drive-select setting for a Winchester drive is determined both by its drive-select setting and the place the control cable and data cable attach to the Winchester controller.

Drive-Select	Winchester Controller
0	J5 Connector
1	J6 Connector
2	J8 Connector
3	J9 Connector

**Software and
Drive-Select
Settings**

Software, whether an operating system or an application program, can be set to access and store information on a particular drive. If the software you have been using is set to access or store information on the drive you are removing, you may be able to direct the software to a remaining drive.

Software may expect the newly designated drive to have the same storage capacity as the drive that you remove. You may experience problems with the operation of your system if you direct the software to a drive of a different storage capacity.

For example, if you remove a 1.2 Mb floppy drive, the software may continue to expect a 1.2 Mb floppy drive in that drive position. If you direct the software to a 360 Kb floppy drive, you may experience problems with the operation of the system.

Refer to your software manual for instructions on how to designate a different drive.

Drive-Select Settings (Continued)

Read the information below if you are removing a BUSINESS-PRO drive from a drive position recommended in Chapter 5 of this manual. If you are removing a BUSINESS-PRO drive that is not in a drive position recommended for that type of drive, follow the instructions for removing BUSINESS-PRO compatible drives.

If Removing a BUSINESS-PRO Floppy Drive

You can remove a floppy drive without changing the drive-select settings on any drives remaining in the system. If you direct software to access or store information on the drive you have removed, you will receive an error message that the drive you have specified in software is invalid.

If Removing a BUSINESS-PRO Winchester Drive

You can remove a Winchester drive with few consequences. If the system loads the operating system from the drive you are removing, you must do the following.

- Copy your operating system and files onto a remaining Winchester drive or floppy diskettes.
- Run the Start-Up program on the Diagnostics diskette to change the drive selected to load the operating system. This will cause the system to go directly to the Winchester drive or floppy drive containing the copy of the operating system and save you time when starting your system.

If the system does not load the operating system from the Winchester drive you are removing, you should not change the drive configuration in the Start-Up program. In this situation, the system will continue to operate as though the drive were defective and still installed in the system.

If you are removing a Winchester drive permanently, you need to update your configuration card.

**If Removing a
BUSINESS-PRO
Compatible
Drive**

When you remove a BUSINESS-PRO drive from a drive position that is not recommended for it in Chapter 5, or you remove a BUSINESS-PRO compatible drive, you need to determine your current drive-select settings.

You can determine these settings by examining the drive section of the configuration card. When no information has been recorded, examine the drives themselves and use the drive manual to interpret the current drive-select settings.

If you find that removing the drive does not require changing drive-select settings, proceed to the next page of this chapter.

**Changing
Drive-Select
Settings**

If you need to change drive-select settings, keep in mind the following general considerations.

- Each drive connected to the same drive controller must have a unique drive-select setting; otherwise, the drives will not work.
- Floppy drives and Winchester drives that have separate drive controllers, have independent drive-select settings. That is, both a floppy drive and a Winchester drive can be selected as first drives.

Consult your drive manual to determine whether the drive uses a drive-select switch or jumper and for information on how to change the drive-select.

After you have finished changing the drive-select settings, record the changes on your configuration card and proceed to the next page of this chapter.

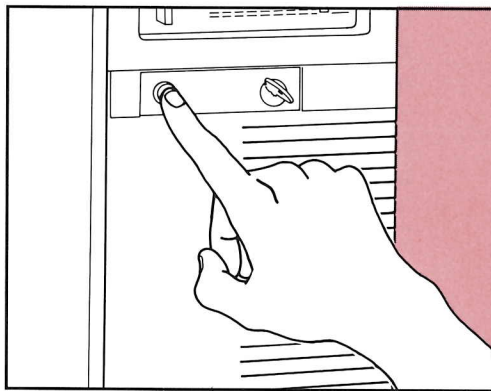
Preliminary Steps

You need to make some preparations for the safe and easy removal of a drive. Whether you remove a Winchester drive temporarily or permanently, you need to back up (copy) all the files stored on it. Copy the files to a Winchester drive remaining in the system, to floppy diskettes, or to a tape backup.

Preparing to Remove the Drive

To prepare for the removal of a drive, follow these steps.

1. If you are removing a Winchester drive, back up all files stored on it. Refer to your operating system manual for instructions on backing up a Winchester drive.
2. Turn off all external devices.
3. Turn off the system unit.

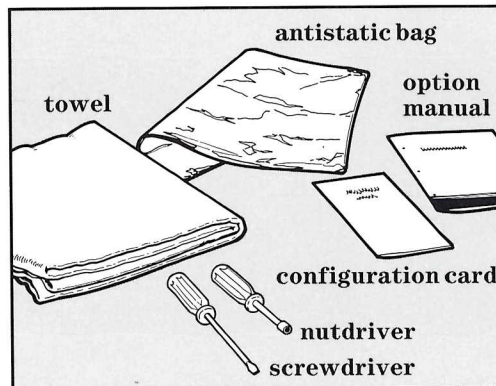


4. Unplug the power cables for the system unit and external devices.

**Preparing
to Remove
the Drive
(Continued)**

5. Gather the following materials.

- A 1/4-inch nutdriver and a medium-sized, flat-bladed screwdriver
- A towel to protect the work surface from scratches
- An antistatic bag or piece of aluminum foil on which to place the drive when you remove it
- The configuration card stored at the back of this manual
- The manual for the drive you are removing



Gaining Access to a Drive

Use the chart to identify the information that you need to gain access to a drive. All of the information is in preceding chapters of this manual.

What to Read	Page
Positioning the System Unit	2-8
Removing the System Unit Stand (optional)	2-9
Removing the System Unit Front Panel	3-3
Removing the System Unit Cover	3-4

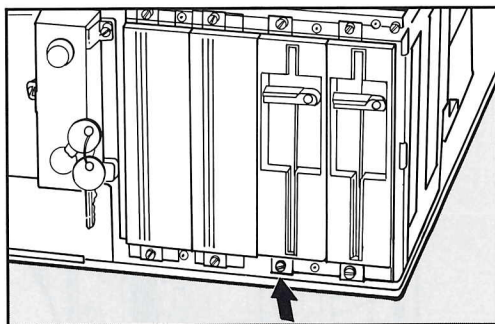
Removing the Drive

Use this information to remove any type of drive.

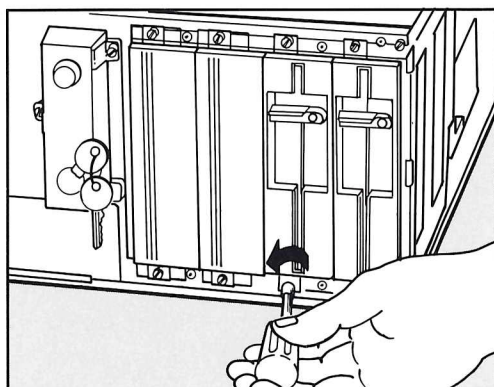
Removing the Retaining Clips

To remove the clips that hold the drive to the system unit, follow these steps.

1. Locate the retaining clips and screws. (Note the position of the clips; you will have to reinstall them when you secure a replacement drive or install a blank plate over an empty drive position.)



2. Remove the screws that secure the retaining clips. (If repositioning a half-height Winchester drive to install a full-height Winchester drive, also remove the plate that covers drive positions 5 and 6.)



3. Set the screws and clips aside. If the drive position had a cover plate, also set it aside.

Removing the Drive (Continued)

You need to disconnect the cables from the drive before you can remove the drive completely from the system unit.



CAUTION

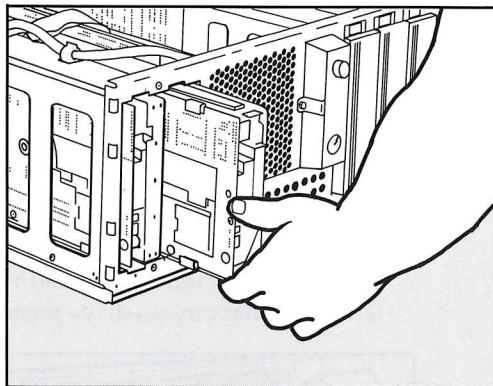
Static electricity can damage drives, especially if you are in a carpeted area. While handling drives, keep one hand on the metal frame of the system unit.

The Winchester drive is a delicate instrument. Handle with care. Never drop, bump, or otherwise subject the drive to physical shock.

Removing the Cables

To disconnect cables attached to the drive, follow these steps.

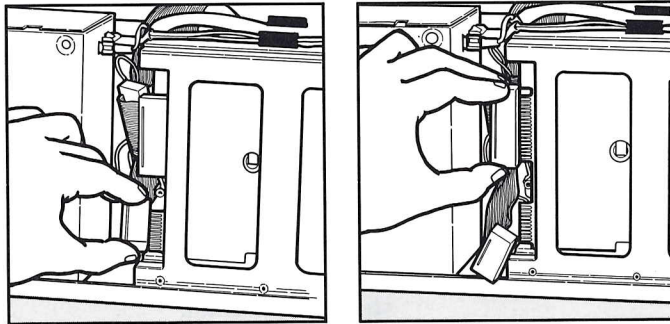
1. Pull the drive partially out of the system unit.



2. If you are removing drives in positions 5 and 6, disconnect the ground wire and cable that connect to the power supply.

Removing the Cables (Continued)

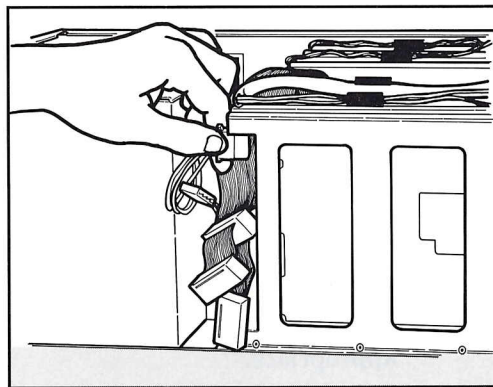
3. Disconnect any ribbon cables connected to the back of the drive. On a Winchester drive, there are two such cables.



Completing the Removal

To complete the removal of a drive, follow these steps.

1. Disconnect the power cable from the drive.



2. Remove any cables that are no longer being used and store them with the drive.
3. Pull the drive completely out of the system unit.
4. Place the drive on an antistatic bag or piece of aluminum foil.

Removing the Drive (Continued)

What you need to do next depends on your reason for removing the drive. Before you proceed, make sure you have evaluated the effects of removing a drive using the information on page 14-3. If you removed the drive only to change settings, use the instructions on page 14-18.

If Replacing With the Same Type Drives

If you removed the drive for immediate replacement with a drive of the same type, follow these steps.

1. If you are returning the drive to your place of purchase, place it in the antistatic bag or wrap it in aluminum foil.
2. Pack the drive in the original packing materials and carton.
3. Make sure the terminating resistor and drive-select settings on the replacement drive are the same as those on the drive you removed.
4. Install the new drive following the instructions in the drive manual.
5. Proceed to the chart on page 14-19.

If Replacing With a Different Type Drive

If you removed the drive to replace it immediately with a drive of a different type, follow these steps.

1. If you are returning the old drive to your place of purchase, place it in the antistatic bag or wrap it in aluminum foil.
2. Pack the drive and cables in the original packing materials and carton.
3. Make sure you install a terminating resistor on the replacement drive, if required, and ensure that the drive-select settings on the replacement drive are appropriate.
4. Install the new drive following the instructions in the drive manual.
5. Record information about the new drive on the configuration card, and eliminate information about the drive you removed.
6. Proceed to the chart on page 14-19.

**If Repositioning
a Drive**

If you removed a drive to reposition it, you may need to change its settings. To do so, follow these steps.

1. Use the instructions in the manual that came with the drive to change its settings. Use the plan recorded on your configuration card.
2. Install the drive in its new location following the directions in the drive manual. Make sure you follow directions for installing the drive in a particular drive position.
3. Do one of the following, depending on your reason for repositioning the drive.
 - If you are installing another drive in the empty position, install the drive following the instructions in the drive manual.
 - If you are not installing a drive in that position, install the cover plate over the empty drive position.
4. Update your configuration card.
5. Proceed to the chart on page 14-19.

**If Removing
a Drive to
Change Settings**

If you removed a drive to change its drive-select settings and you intend to reinstall it in its original position, follow these steps.

1. Use the instructions in the manual that came with the drive to change the settings. Refer to the plan you recorded on your configuration card.
2. Install the drive according to the instructions in the drive manual.
3. Update your configuration card.
4. Proceed to the chart on page 14-19.

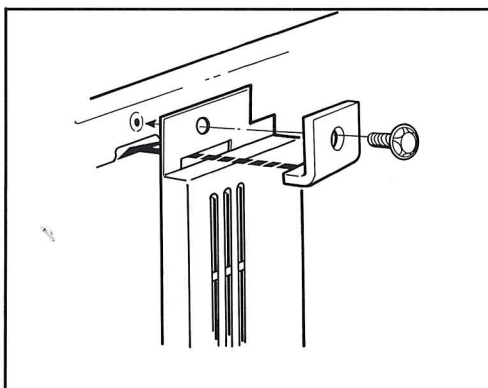
Removing the Drive (Continued)

Before you proceed, make sure you have evaluated the effects of removing a drive using the information on page 14-3.

If Removing a Drive for Service

If you removed a drive for service, follow these steps.

1. Place the drive in the antistatic bag or wrap it in aluminum foil.
2. Pack the drive and cables in the original packing materials and carton.
3. Make any required changes to drive-select settings for drives remaining in the system unit. Use the instructions in the drive manual.
4. Make any required changes to terminating resistors for drives remaining in the system unit. Use the instructions in the drive manual.
5. Reconnect the ground wire and cable to the power supply if you disconnected them to reposition a Winchester drive from drive positions 5 or 6.
6. Install the cover plate over the empty drive position, using the screws and the retaining clips to fasten the plate to the system unit. If you do not have a cover plate, contact your place of purchase.



7. Proceed to the chart on page 14-19.

Reassembling and Testing the System

You need to reassemble and test your system regardless of whether you replaced the drive you removed. Use the chart to identify the instructions you need. All of the instructions are from preceding chapters of this manual.

What to Read	Page
Reinstalling the System Unit Cover	6-2
Reinstalling the System Unit Front Panel	6-4
Preparing to Attach the System Unit Stand (if removed)	7-2
Attaching the System Unit Stand (if removed)	7-3
Reattaching Cables	10-2
Testing the System After Adding an Option	10-3

Chapter 15: Removing an External Device

Use the instructions in this chapter if you are removing an external device, such as a printer or external modem. Before removing an option for service, check with your dealer for specific instructions to see if options can be returned separately.

Table of Contents	Preliminary Steps	15-2
	Removing the External Device	15-3
	Testing the System	15-5

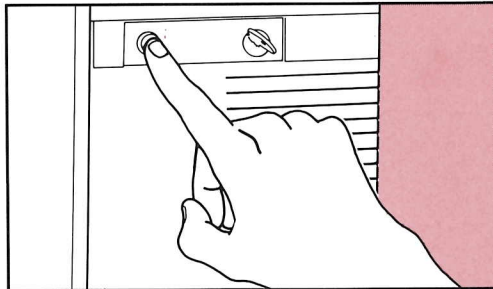
Preliminary Steps

You need to make some preparations for the safe removal of an external device.

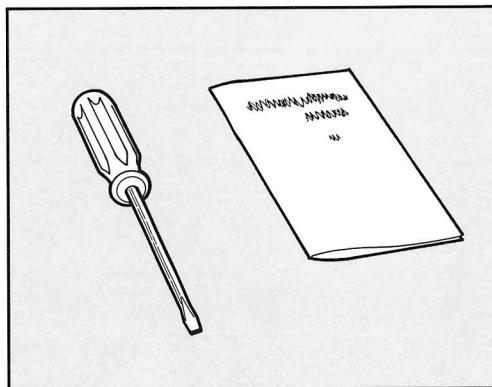
Preparing To Disconnect the External Device

To prepare for the removal of an external device, follow these steps.

1. Turn off all external devices.
2. Turn off the system unit.



3. Unplug all power cables for the system unit and external devices.
4. Gather the following materials.
 - Configuration card stored at the back of this book
 - Small, flat-bladed screwdriver if you are removing a printer, display unit, or other external device with a screw-type connector



Removing the External Device

The procedure for removing an external device is similar for all external devices. The following describes the general removal procedure.

Procedure

To remove an external device, follow these steps.

1. Disconnect the device from all of the following that apply.
 - Power outlet
 - System unit
 - Any other external device to which it is connected
2. Update your configuration card as necessary.
 - If you are not replacing the device, delete the entry for the device from the configuration card.
 - If you are replacing the device with an identical device, change the serial number on the card.
 - If you are replacing the device with a different external device, change the device name and serial number on the card.

Removing the External Device (Continued)

Once the device is removed, your next task depends on whether you are replacing the device or not.

If You Are Installing a Replacement

Refer to the manual that came with the external device you are using as a replacement. Use the instructions in that manual to connect the device.

If the replacement device is not identical to the one you removed, you may have to change a device designation in one or more of your programs so the programs will work with the new device. For example, replacing a serial printer with a parallel printer may require you to change the printer designation in a spreadsheet program from serial port 1 to parallel port 1.

For information on changes you may need to make, refer to your software manuals and the manual for the new device. You may also find useful information in this manual, in Chapter 8, Connecting External Devices.

When you finish connecting the device, proceed to the next page of this manual.

If You Are Not Installing a Replacement

Permanent removal may require you to change a device designation in one or more of your programs so the programs can use a different device. For example, removal of an external modem may require you to make a change in a communication program that you have been using.

After you complete the removal instructions in this chapter, refer to your software manuals and the manuals for your other external devices for information on changes you may need to make.

Testing the System

Before you use the system following removal of an external device, you need to test the system.

Before Testing the System

To complete the removal procedure, follow these steps.

1. Ensure that the power switches for all devices you are connecting are in the **OFF** position.
2. Reconnect all of the power cables that you disconnected earlier.
3. Plug the power cables into the outlets.
4. Test the system, following the instructions on page 10-3.

Customer Response Form

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(Assigned by TI)

Your comments and suggestions assist us in improving our products.

About you:

Your computer type: _____ Date: _____

Your name: _____

Company name/department: _____

Telephone: (_____) _____ Address: _____

City: _____ State: _____ ZIP: _____

About your system:

Size of memory (RAM): _____ Type of display: _____

Type of graphics: _____

Check if you have:

☐ One diskette drive

☐ Two diskette drives

☐ Winchester disk

Response concerns:

☐ Hardware

TI Part No.: _____

☐ Software Name _____ Version No.: _____

☐ Manual Serial No. (if any): _____

Did you run diagnostics? ☐ Yes ☐ No

Additional documentation attached? ☐ Yes ☐ No

Error code or message _____

Comments:

If your comments concern a manual, please include applicable page numbers.

Please use one form for each response.

Attach additional sheets if required.

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About your system:

Size of memory (RAM): _____ Type of display: _____

Type of graphics: _____

Check if you have:

☐ One diskette drive ☐ Two diskette drives ☐ Winchester disk

Response concerns:

☐ Hardware TI Part No.: _____

☐ Software Name _____ Version No.: _____

☐ Manual Serial No. (if any): _____

Did you run diagnostics? ☐ Yes ☐ No

Additional documentation attached? ☐ Yes ☐ No

Error code or message _____

Comments:

If your comments concern a manual, please include applicable page numbers.

Please use one form for each response.

Attach additional sheets if required.

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